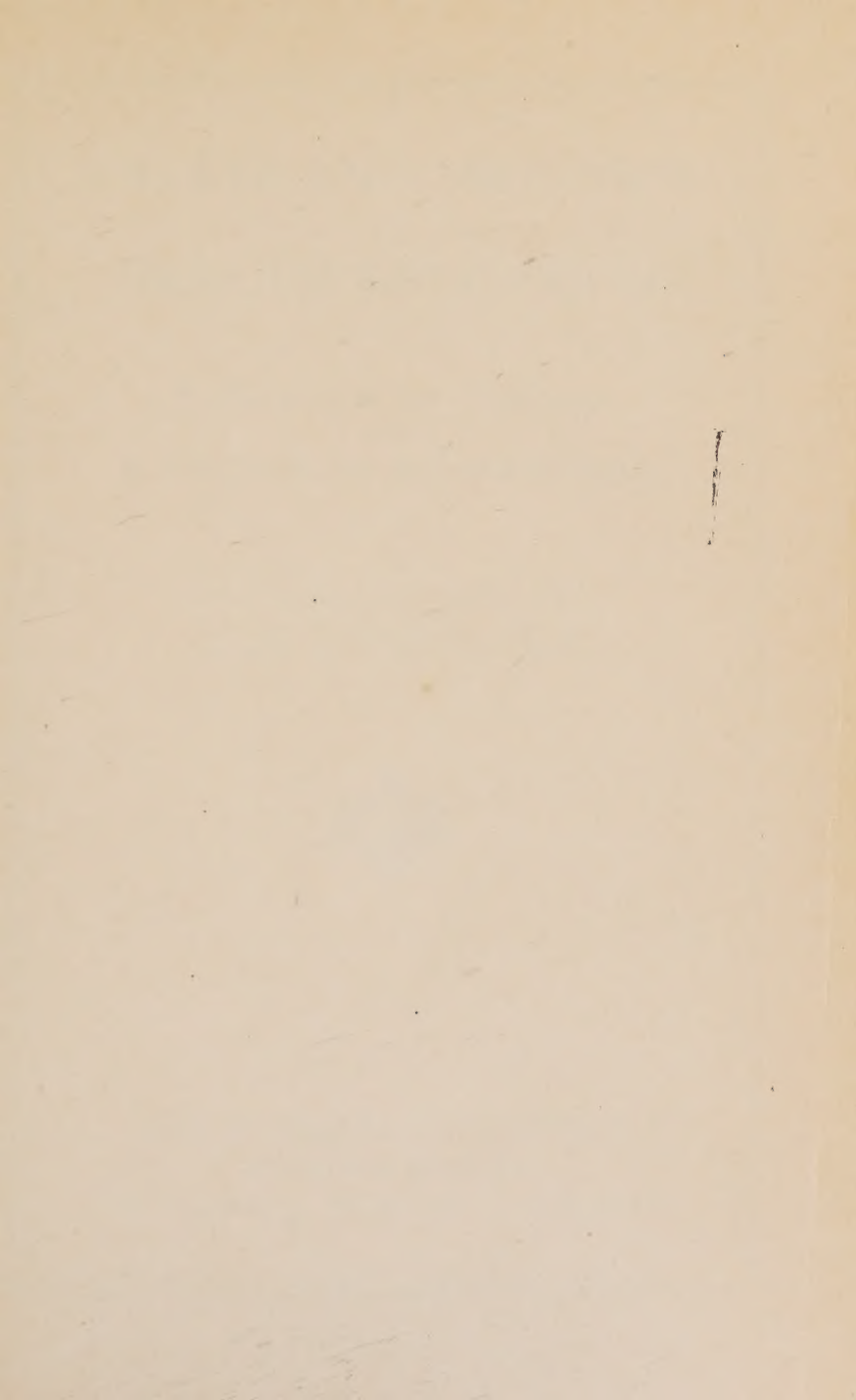




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VALUES AND METHODS IN HEALTH EDUCATION

A Handbook for Teachers
and
A Textbook for Normal Schools

BY
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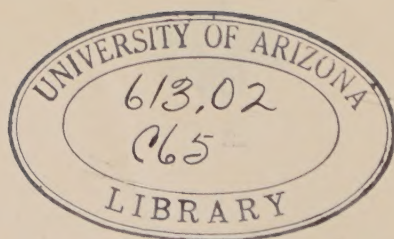
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To
THE MEMORY OF MY BROTHER
GEORGE LAMONT COBB

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Purpose and Plan of the Book

The value of human life will always be a debatable question. There can never be an estimate that will satisfy everyone and there will always be as many answers to the question as there are individuals to answer it. Conceiving health in its broadest sense, as a term embracing the mental, the social and the spiritual, as well as the physical life, there can be little question of the value of health to life, for with it, "one can live most and serve best" and without it, life becomes little more than a struggle for existence.

Health is the heritage of most children but something so taken for granted that they must be taught to value and protect it. For the child who is not so fortunate as to receive this heritage and who lacks health in greater or less degree, there is special need of help for him and for his parents in the matter of health education.

In the schools of today, emphasis is being placed more and more upon the necessity for a knowledge of the fundamental principles of health and hygiene; more attention is being given to the discovery and correction of defects through competent professional aid, and children are being taught, first, the incalculable value of health, and then, how to develop and conserve it. Hence, the purpose of this book is to emphasize the importance and value of health education and to present practical methods, suggestions, and devices for health instruction and for training in the formation of health habits.

The school's program of safeguarding the health of the child devolves chiefly upon the teacher and for her this book is primarily written. In it the study and practice of health essentials are made matters of everyday living,

something the pupil can understand and use, for the principles that govern health are, in themselves, of little value to him unless he is trained to appreciate them and to put them into practice.

Health problems, not only of the individual but of the home, of the school, and of the community are presented and discussed in a manner designed to arouse the pupil's interest and hold his attention. How health instruction may often be correlated with his lessons in history, geography, and other subjects is pointed out.

Each chapter is divided into two parts, the first part taking up the consideration of some outstanding health problem, and the second, of equal importance, presenting methods and devices for teaching the health principles and practices.

There are seventy-two original drawings illustrating these devices and showing, in practical detail, methods that have been used successfully in the classroom. Most of the illustrations are suitable for reproduction on the blackboard. Supplementary questions and references to guide in further discussion and reading follow each chapter.

If this book helps in some way to present health as something of utmost value to possess and as an interesting subject to teach, its purpose will have been served.

WALTER FRANK COBB

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CHAPTER I

THE MEANING AND VALUE OF HEALTH

The meaning of health. When the blind men of Hindustan examined an elephant, so the ancient legend goes, each touched a different part of the animal, and each accordingly gave a different description of the creature. One touched the elephant's leg, and likened the animal to a tree; one touched its trunk and compared it to a huge snake; a third said the elephant was like a barn, and others gave still different answers.

Like this wide variety in the descriptions of one animal are those definitions of health given by people who, figuratively speaking, touch health only blindly. In the Dictionary of Life—which contains the most satisfactory explanations of man's workaday world—the definitions of health surpass those of Webster's volume in variety and scope. Health, like success, virtue, or beauty, is defined by each individual according to his own point of view. This viewpoint itself may be altered by experience, physical and mental changes, or current ideas of health.

The individual who has always enjoyed good health usually knows least about it. If he defines it at all, it is as nothing more than "living naturally." Some people will define health as the absence of disease.

Genuine appreciation of the meaning of health comes oftenest from those who at some time in life have lost good health, or have been closely associated with others who have struggled against ill health and the attendant suffering, discouragement and lessened abilities. Good health exemplifies the old adage, "We never miss the water till the well runs dry."

The aims of health education. One of the most serious problems that face us as leaders of a profession, one duty of which is the promotion of health, civic consciousness, and idealism, is to organize in our own thinking all the best thoughts on the meaning and value of health that we can get from the keenest minds of our day. If we do this, we shall have a definite plan for health education based upon scientific, psychological, and sociological principles. This plan can then be put into operation in every school in our land as our contribution to individual, community, and national health.

From what has just been said one must not get the notion that educators are completely to monopolize the field of health education. Nothing is farther from the truth. This is shown by the action taken by the American Medical Association and the National Education Association in forming a Joint Committee on Health Problems. That committee has prepared and placed before the public a most comprehensive, inspiring, and informative report which should be among the books of every teacher. It represents the best medical, social, and educational ideas and ideals of the present day, as the following quotation shows:

The aims of health education may be briefly stated.

1. To instruct children and youth so that they may conserve and improve their own health.
2. To establish in them the habits and principles of living which throughout their school life, and in later years, will assure that abundant vigor and vitality which provide the basis for the greatest possible happiness and service in personal, family, and community life.
3. To influence parents and other adults, through the health education program for children, to better habits and attitudes, so that the school may become an effective agency for the promotion of the social aspects of health education in the family and community as well as in the school itself.

4. To improve the individual and community life of the future; to insure a better second generation, and a still better third generation; a healthier and fitter nation and race.

As pointed out by the Joint Committee on Health Problems in Education, all phases of health—physical, mental, social, and moral—must be emphasized if these aims in health education are to be realized. To paraphrase Browning's line, the health that we teach, and for which we reach, should exceed our grasp, else what's an ideal for? The teaching of health must be inspirational as well as informative and practical. It must sound a note of optimism, of fraternalism, and of altruism. It must be looked upon as a part of life itself; as is true of life, the grave is not its goal. Surely, when health education looks ahead to generations yet unborn, it is giving us something that touches upon immortality. So regarded, it places upon each of us a responsibility that we cannot refuse to accept and discharge to the best of our ability, lest we prove derelict to the duty of man to man, and of man to God.

The value of health. The value of health, like the meaning of health, depends largely upon the appraiser's point of view. Dr. Johnson's comment that "life, like every other blessing, derives its value from its use alone," applies equally well to health, one of life's greatest blessings. Individuals value their health according to its known usefulness to them. Business, with all its invested capital hanging in the balance, values the health of its employees on a dollars-and-cents' basis. The government values the health of individuals for still other reasons, all of which, however, make for national prosperity either directly or indirectly. In general, the law of supply and demand which determines the price of commodities likewise operates more or less effectively in determining the value of

health. If one does not have health, one values it highly; if one possesses health, one is likely to value it less highly and to take it very much for granted.

Investigations show that on account of sickness women employees lose almost twice as much time as do men employees. In the teaching profession both sexes show a better record for health than they show in their respective groups in industrial and civil-service occupations. The following table from *The Health of the Teacher*¹ furnishes an interesting study. In connection with the data supplied by this table, let us use other data obtained from the World Almanac for 1925. The latter publication shows that in 1920 (the last year for which information is at this time available) 33,064,737 males and 8,549,511 females were employed (in all occupations) in the United States. If, now, we multiply the sum of these numbers by 3.36, a figure that indicates the average total number of working days lost by a teacher in one year because of illness, we shall be amazed at the stupendousness of our national overhead for ill health.

In making the computation following, it must be borne in mind that 3.36 days per year, the amount of time lost by teachers because of illness, is actually a very conservative figure for use in computing the time lost by the great mass of people engaged in other gainful occupations. The total annual loss to the people of the United States is, then, an astounding sum, the enormousness of which we can scarcely imagine. And this loss means not only a loss of salary to the employee. It means a loss of money to the employer, expense for medical treatment, and often an interruption in the productiveness of some member of the family who must care for the one who is ill.

¹*The Health of the Teacher*. School Health Studies No. 12, Department of the Interior, Bureau of Education, Washington, D. C.

Average number of days' absence for the school year of teachers, industrial and civil-service workers (the annual average of the latter groups reduced to two-thirds)

Teachers	All	Men	Women
Springfield, Mass., 1922-23.....	2.14	.98	2.33
New York City, 1914-15 (3 days or more).....	2.88	1.34	3.11
New York City, estimated for all absence.....	¹ 3.84	¹ 1.79	¹ 4.15
Denver, Colo., 1922-23.....	3.50		
Gary, Ind.:			
1923-24	3.52		
1924-25	3.90		
Cleveland, Ohio, 1917-1922.....	4.79	2.20	5.03
Houston, Tex.:			
1925-26 (white).....	3.70		
1925-26 (colored).....	¹ 2.90		
Grand Rapids, Mich.: 1925-26.....	4.10		
Akron, Ohio:			
1924-25	2.74		
1925-26	2.34		
Richmond, Va.:			
1925-26 (white).....	3.35		
1925-26 (colored).....	¹ 2.65		
Total average for white teachers.....	3.36	1.50	² 3.49
<i>Other occupations</i>			
New York factory workers, 1919 (3 days to 6 months ³).....	1.55	1.26	2.24
Sickness and death benefit fund.....		3.33	
United States Public Health Service.....	4.40		
Metropolitan Life Insurance Co., 1922.....		2.73	5.60
Jordan, Marsh Co., Boston, Mass.....		3.53	6.13
Prudential Life Insurance Co., 1922-23.....		5.33	8.66
Hood Rubber Co., 1921-1923 (2 days or more).....		¹ 2.77	¹ 5.94
Public Utility Co., 1923.....		3.90	9.07
Post office employees, New York City, women, 1924-25			18.66
Total average for other occupations.....		3.39	⁴ 8.40

¹Omitted in general average.

²If the proportionate absence of men and women in all the cities listed is the same as that in Cleveland, the total average of women would be about 3.53 days.

³Period of absence offsets that of New York teachers.

⁴If the figures for post-office workers are omitted, the average absence of women was 6.33 days.

The teacher's health problems. As teachers, we should be particularly concerned with the problem of keeping our average for absence on account of ill health as low as possible, because the greatest loss comes not to us, but to the pupils, their parents, and the community. Here, again, we see that we can only speculate as to the actual value of health. It is hard for humanity to appreciate this value until it begins to depreciate. It is difficult to take health seriously until ill health takes you. Optimism is an excellent virtue, but we should take heed lest, through the lack of hygienic precautions, the optimism of youth and abundant health defeat the assurance—which we all want—of an optimum of health through life. In the single short paragraph written by Horace Mann, the distinguished American educator, there is much to think about: “All through the life of a feeble-bodied man, his path is marked with memory's grave-stones which show the spots where noble enterprises perished for lack of physical vigor to embody them in deeds.”

One of the best articles ever written on the meaning and value of health is from the pen of Orrison Swett Marden. It is thought-provoking, inspiring, and very much to the point.

I AM——?

I am the vital principle of life—the greatest of all success and happiness assets.

I am that which gives the plus quality to human beings. I put pep, ginger, and vim into human effort.

I am the source of physical and mental power. I give the body vigor and buoyancy, the brain vital energy and originality.

I am your best friend—the friend of the high and lowly, the rich and the poor alike—but, be he king or beggar, who violates my laws must pay the penalty.

I am often sought in vain by the man who rides in his limousine, but I am generally found in the company of the man who walks to his work and takes plenty of exercise.

I am the great multiplier of ability, the buttress of initiative, of courage, of self-confidence, the backbone of enthusiasm, without which nothing worth while was ever accomplished.

I am the greatest constructive force in the life of man. Without me his faith weakens, his ambition sags, his ardor oozes out, his courage faints, his self-confidence departs, his accomplishment is nil.

Without me ambition and wealth are but a mockery, a palatial home and luxuries a bitter disappointment.

Next to life itself, I am the greatest gift God has given to man. The millionaire who has lost me in piling up his fortune would give all his millions to get me back again; but I am beyond the reach of money.

I am that which gives buoyancy to life, which makes you magnetic, joyous, forceful, which brings out your resourcefulness and inventiveness; that which raises efficiency to its maximum and enables you to make the most of your ability.

I increase every one of your forty or fifty mental faculties a hundredfold. I am the leader of them all. When I am present they are up, at their best; when I am absent, they are down, at their worst.

I am the friend of progress, the stimulator of ambition, the encourager of effort, the great essential to efficiency, to success, the promoter of long life and happiness.

I am a joy bringer. Where I go, good cheer goes. Where I am not, depression, the "blues," discouragement are present. My absence means declining powers; often, thwarted ambition, blighted hopes, mediocrity, failure, a shortened life.

The wise man guards me as the apple of his eye; the fool abuses and loses me through ignorance, indifference, or neglect.

I AM GOOD HEALTH.

SOME SUGGESTED METHODS

The Modern Version of Pandora's Box

As a rule most children are interested in mythology. Tell the class the story of Pandora's Box, or have some pupil tell it. Discuss the story, and briefly consider some of the human ills that escaped into the world when the box was opened. The high point in the story is, of course, that Hope was also in the box, and that Hope remained to encourage humanity in its ceaseless battle against all its woes.

After discussing the story in the manner outlined, show the class a box—a one-pound candy box will serve admirably. It should be covered with gold or silver paper or decorated in a manner appropriate to a jewel box. Explain that the box contains, not Hope, exactly, but something of inestimable value for combating human ills. Take from the box (one at a time), and distribute to the pupils, slips of paper upon each of which is printed the name of some enemy of health—Foul Air, for example. Finally give the pupils a chance to guess the identity of the mysterious friend of mankind that remains in the jewel box.

When this has been done, take from the box an envelope containing squares of cardboard, each of which bears one of the following letters: A E H L H T. Directions within the envelope (which are to be read to the pupils) explain that, when properly arranged, these letters spell the name of a bug which is very powerful in driving away all human ills. Then ask the pupils to guess the name of this benefactor of humanity.

When the guessing has been concluded, the letters should be arranged upon the blackboard so as to form the word shown in Figure 1. First make the letter H, then E,

then A, and so on, thus spelling out the word HEALTH. Red chalk should be used for making the cross-bar on the first H. This red bar is a wound stripe—and honor stripe, too—that the Health Bug received for his bravery in the battle against disease.

At the conclusion of this exercise all the pupils will



Figure 1. The Health Bug

doubtless signify their willingness to be bitten by the Health Bug. Discuss with them the many ways in which they can take advantage of this creature's presence in the world. Ask them to do their best to make health contagious. Remind them that inoculation with health must take place through the eyes and ears, that is, by what one sees and hears about health. Tell them, too, that unfortunately one inoculation does not confer

immunity. Health must be *contacted* time and time again if it is to be *contracted*.

How Good Health Came to Me

This effective device, which has an element of curiosity in it, affords an excellent opportunity for discussing certain principles of good health with the pupils.

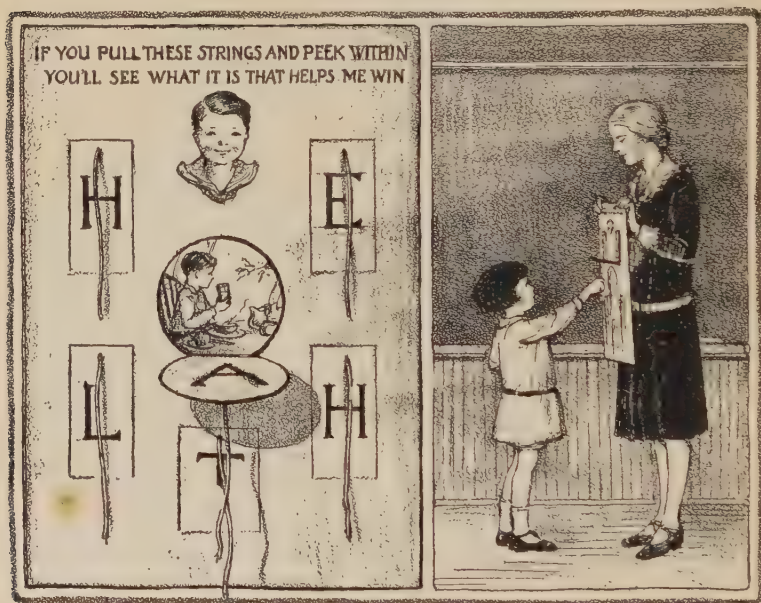


Figure 2. Principles of Good Health

As shown by Figure 2, the teacher should prepare a placard about 18 inches by 30 inches in size.

As seen in the drawing, several flaps should be cut in the cardboard and a string attached to each. Behind each opening there should be a picture pasted showing the health principle one wishes to teach. Suitable pictures can be secured from magazines. Colored pictures are preferable.

Holding the placard before her, the teacher should ask a pupil to step forward and pull one of the strings. When the flap falls, a health picture is revealed. This picture should furnish the basis for a class discussion of that principle of health illustrated. Topics that lend themselves to class discussion are; (1) food, (2) cleanliness, (3) care of the teeth, (4) fresh air, (5) play in the sunshine, (6) rest and sleep, (7) protection from the elements, (8) habits that spread disease (sneezing, coughing, careless spitting).

Children should be led to look upon an opportunity to pull one of the strings as a privilege for which they should await their turn. The selection of the pictures (which can, of course, be changed from time to time), is a matter for the energetic teacher to determine. She must select pictures that fit the material she is teaching.

A Dictionary of Health

This device may be used either as an individual or a class project. Before presenting the plan, explain something of the origin and development of the dictionary. With pupils of the upper grades this discussion may include a consideration of the ten most important words in the English language. Even though a variety of words is certain to be suggested, *health* is very likely to be included in every list proposed. In doing this preparatory work, pupils should be encouraged to ask their parents for suggestions.

Turn to the definition of *health* in the classroom dictionary. Discuss this definition with the pupils and let them decide whether or not, for their purpose, the definition is sufficiently inclusive. Suggest, then, that the class make a dictionary that includes only those words which have a definite relation to health. For example,

under *A*, the following words, and others, may be entered: Accidents; Air; Appetite; Athletics; etc.

After the discussion of any given word let the pupils decide upon the best definition given by one of their group. It will interest pupils if one of their number is selected to act as chairman of each discussion. Whenever a definition has been finally agreed upon, enter it in the Dictionary of Health. An ordinary school notebook, properly indexed, may be used for the book itself. Emerson's line, "Life is our dictionary," may be used as a quotation for the cover.

The preparation of such a dictionary of health as has been described will take several weeks; it may profitably be extended throughout the entire school year. From time to time words that have already been considered will again find their way into the lesson discussions; indeed, definitions may well be revised occasionally in the light of fuller knowledge on the part of the pupils. Pupils should be encouraged to refer to the dictionary of health, and, where there is opportunity, they should be taught how to make definitions for the synonyms and antonyms of the words they have entered. Like the classroom dictionary, the dictionary of health should be kept where it is available to all.

Smile: A Health Game

"Smile," a health game that affords considerable action and fun, can be played wherever there is room enough to stand. No equipment is required. The purpose of the game is to tell a health story to the class.

"Smile" is the story of a boy whom the school dentist examined. The dentist found that the hero of the story was in the habit of paying more attention to his hairbrush than to his toothbrush. The dentist advised the

boy to give his teeth the necessary attention, and the boy did so. Then the dentist smiled, the boy smiled, and everybody else smiled.

At the outset, each row of pupils in the room is assigned a certain cue word. These are: teeth—toothbrush—toothpaste—dental floss—mouth wash—dentist—our hero. Whenever any one of these words appears in the narrative, the pupils in the row designated by the word uttered, rise from their seats, stand in place, turn around, and then again sit down. Pupils should be warned to listen attentively because they will hear their respective cues any number of times. The class should be told that whenever the word “smile” is used, all are to rise, stand, turn around, and sit down.

Before playing this game the teacher should make some pertinent remarks about the care of the teeth. She should explain that every individual ought to have his own toothbrush, that there should be no such thing as a family toothbrush, that the better plan is to buy a toothbrush that comes packed in a sealed carton and not one that has been handled by a lot of people. Paste, it should be noted, is used to clean the teeth, not to keep them from falling out. Further zest may be added to the game if various pupils in the row that represents teeth are designated “sweet tooth,” “wisdom tooth,” and so on.

The Story of the Smile

This is the story of a boy whom we shall call our hero (action), a boy who was more loyal to his pals than to his pearls. He neglected his teeth (action) shamefully, but they rarely complained. Once in a while a tooth (action) would object, but a drop or two of oil of clove would usually put it to sleep.

So our hero (action), boy that he was, went his way

very joyfully until the dentist (action) one day visited the school. The dentist (action) noticed that our hero's (action) teeth (action) were yellow and pasty-looking. He took the boy to one side and advised him to use his toothbrush (action) twice a day and to ask his parents to buy him some toothpaste (action) and some dental floss (action). I'm sure you would never permit your teeth (action) to become so discolored as those of our hero (action).

But it was no easy matter for our hero (action) to get his teeth (action) white again. Before the teeth (action) became white and pearly our hero (action) had worn out his toothbrush (action), used up his toothpaste (action) and his dental floss (action) and more mouthfuls of mouth wash (action) than I could count. His parents were so well pleased with the change, however, that they were willing and glad to buy our hero (action) all the toothbrushes (action), toothpaste (action), dental floss (action), and mouth wash (action) that he wanted.

The next time that the dentist (action) saw our hero (action) he was so pleased that he had to smile (action). This made our hero (action) smile (action) too. If you had been there you would have worn a smile (action).

This game can be played time and time again. It will always interest and amuse pupils, particularly if the teacher changes the story so as to give it novelty. It is well to let the pupils sometimes manage the game themselves, and to let one of them act as leader.

SUMMARY

When we want to know the meaning of new situations and experiences like those we continually have to face, we search through our "dictionary of life." In all probability we shall want to consult the "library" of our friends,

also. For our definition of the meaning of health we find it equally advantageous to search through the experience of humanity, and for an interpretation of the value of health we consult similar sources. Experiments, as well as experience, help us in reaching conclusions. We learn, for example, that health has different meanings and different values—varying according to the judgment of the individual who makes the appraisal.

In helping to organize present-day knowledge of health and attitudes toward it, an important service has been rendered by the Joint Committee of the National Education Association and the American Medical Association, on Health Problems in Education. This committee has submitted a report on health education that is outstanding in its helpfulness to educators. The report is scientific and inspiring. Health instruction that fails in either of these two essentials—accuracy and interest—is a dull educational tool, indeed. We ought to think more often of the words of Sir Gilbert Chesterton: "It is not enough for a prophet to believe in his message; he must believe in its acceptability."

Some Questions for Consideration

1. In what respect does the place of health in the curriculum resemble that of ethics?
2. What are some of the chief reasons why the public is now more interested in health than ever before?
3. How does the following quotation from Alexander Pope apply to health: "The race by vigor, not by vaunts, is won"?
4. Does the following definition satisfy you as being adequate? "Health is that condition of the body in which there is physiological, psychological, and emotional harmony of action." Define health in your own terms.
5. In what way does an investment in health pay most—physically, financially, mentally, emotionally, or socially? What factors influence you in your decision?

6. Give examples of negative health education, and positive health education.

7. May day is rapidly becoming known throughout the land as "Child Health Day," largely through the activities of the American Child Health Association, 370 Seventh Avenue, New York. What suggestions can you make for a health education program in your city which will be in line with the spirit of the new ideals concerning healthy living?

References for Further Reading

Terman, L. M., *The Teacher's Health*. (Houghton Mifflin Company.)

Wood, Thomas D., *Health Education: A Program for Public Schools and Teacher Training Institutions*. (Report of the Joint Committee of the N. E. A. and A. M. A.) Dr. Thomas D. Wood, 525 West 120th St., New York City.

Wooten, K. W., *Health Education Procedure*. (National Tuberculosis Association.)

School Health Programs from Many Lands (\$.50 postpaid) and *Health Trends in Secondary Education* (\$1.00 postpaid). (The American Child Health Association, 370 Seventh Avenue, New York City.)

CHAPTER II

LIVING IN THREE DIMENSIONS

Aims in life. The progress of a people's civilization can be measured by the successive objectives of the people themselves. The history of humanity and also the life-history of the normal individual show a well-marked tendency toward progression from selfish interests to loftiness of purpose; progression from a my-will-be-done attitude to one that is rather satisfied with "Thy will be done." As the individual and the race grow older, objectives change; they become better defined, more social in nature, and more worthy of us as beneficiaries of a rich past.

The seven objectives that the National Education Association Commission has set up for the guidance of those who must teach health unmistakably show this tendency of society to work for the elevation of humanity as well as for its preservation. The objectives mentioned are these: (1) Health; (2) the command of fundamental processes; (3) worthy family membership; (4) vocation; (5) citizenship; (6) the worthy use of leisure; (7) ethical character. These objectives challenge our best marksmanship. Although it is no easy task to score a bull's-eye in any one of these aims, nevertheless we learn from past experience that man has always been able to find a way where there was a will. Let it not be said of present-day teachers that they are less resolute than others.

Life expansion. There is no better way to summarize the above educational objectives than to characterize them as a life expansion program; as a program that takes thought of the importance of life's depth and life's

breadth as well as of its length; as a program that provides for spiritual growth and not merely for the addition of years to the span of life. Rousseau, the French philosopher, expressed much the same idea in these dynamic words: ". . . to live is not merely to breathe; it is to act." And just in this lies the basis of our program of health education: The correlation of the living process with an aggressive and inspiring attitude toward health. This attitude must include habit formation, health information, and, where necessary, reformation—physical, mental, social, and spiritual. Healthy living requires acts as well as facts; it requires activity as well as knowledge; it requires physical action as well as mental reaction.

The three-dimensional life. The mathematics of life daily becomes more complicated. Time was when man's chief problem was the protection of life: his own life and the lives of those dear to him. He lived in the present; the future was a matter of little concern. Gradually, to the idea of protecting life was added that of extending life, and thus was begun, figuratively, the transition from a problem in the simple arithmetic of life to one in higher mathematics. Life had begun to have dimension.

At first, the main consideration was the length of life. Gradually other dimensions entered into the problem of living; it expanded in terms of depth and breadth; that is, in terms of quality, character and service. All these phases of life find their place in our present-day ideal. Our measuring stick for estimating the life of individuals would not be at all satisfactory for insurance companies or others who deal with life in terms of years, and with mortality statistics. Society is chiefly interested in the capacity of its members to lead happy, useful lives; to live lives that are well rounded out. Plainly, an indi-

vidual's value to society depends upon his capacity for living. His days may be relatively few, but his value to society may nevertheless be very great if his life is expanded so that it reaches great intellectual, moral, social, and spiritual heights.

The measuring rod for the three-dimensional life is, therefore, not a *year-stick*, but a *deed-stick*.

The span of life. The progress that science is making in lengthening the average life-span is at once encouraging to society and discouraging to the individual. All statistics which deal with length of life point to an increase in man's tenure of life. According to Dr. Louis I. Dublin, our generation may expect to live about eighteen years longer than the generation of our grandfathers lived; we are promised that we may expect to live some seven years longer than our fathers lived; we are informed that our children will probably live nearly five years longer than we. The average length of life is now about fifty-eight years; we read that something like twenty years can be added to this by a general observation of correct health habits and by annual physical examinations.

We see the discouraging aspect of this scientific progress, however, when we realize that these figures refer to averages, and not to individuals. In other words, while science has increased the average life-span of the group by safe-guarding society against disease, it can not make the natural life-span of an individual any longer. It can only protect him so that he has a better chance of completing that natural span.

Professor Raymond Pearl of Johns Hopkins University, a scholar well qualified to speak on vital statistics, believes that ancestry has more to do with longevity than any other factor. He regards heredity as the winding

process of the human timepiece; he considers it the mechanism that makes the human clock run. Environment cannot give the instrument additional momentum; the best it can do is to deal kindly with man so that the wear and tear of life may not hasten the time when, in the natural course of events, the human timepiece runs down.

We cannot increase the length of an individual's natural span of life, but we can do much to safeguard his life-span through modern methods of health conservation. What is more, we have within our control the power to lengthen our health-span and our work-span, two great boons to an abundant life. If we may not dream of the day when centenarians will be commonplace, we may at least dream of the time when the cup of life will be more nearly full of vigor, enthusiasm, strength, and health—which we may call plus-health. Our task is to make better use of our lease of life. Science is pointing the way, and society is popularizing the idea. It is now our business to follow the words of Herbert: "Get to live; then live and use it."

The health point of view. Our attitude toward health depends upon our educational altitude. The higher we climb upward on the educational mountain peaks, the better view we get of the relative importance of health and the other objectives of life. Those who have had experience in mountain climbing will recall how the objects below seem to fade in importance as one ascends, and how the views hitherto obscured come within the range of our vision on such occasions. As we ascend, we see less and less of detail, but more and more of perspective. We learn the relative heights of hills and mountains, the relative sizes of their bases, and the ultimate direction of the rivers which meander through the valleys. Such views are always awe-inspiring, but

nevertheless they always lack something. One feels the need of a field-glass to supplement the naked eye; too, one feels the need of information that a guide can give.

Our experience in attempting to gain the best possible view of our problems as teachers is not unlike that set forth above. We need the services of a guide—a leader in education—one who can tell us how to avoid the dangers of our profession; one who can tell us where the best climbing is to be found and what to look for in scanning the horizon. In working out a hygiene program, we naturally look to hygienists and educational experts. We find among them many illustrious leaders, some internationally known. One of these, Dr. Thomas D. Wood, who spoke at the meeting of the National Education Association held in San Francisco in 1923, has this to say about the teaching of health: [“Health education could be defined as the sum of the experiences in the school and elsewhere which favorably influence habits, attitudes, and knowledge related to individual and community health. Health education, through its program, should prepare the youth in any community, in any nation—the children and the youth of the world—for all the opportunities and the obligations of life.”]

These words were addressed to the five million teachers of the world, part of whose work is to present health as an active and attractive phase of life to the world's two hundred million school children. Few of us realize the magnitude of the task that confronts the educational authorities of this and other lands; we have facts in plenty—the need is to make those facts function in the daily activities of the boys and girls and the men and women of today.

Facing our problem. Our problem is not unlike that the marksman faces when he takes his place on the shooting range. His target is plainly visible; his ammunition

is suitable; his gun is accurately calibrated and his sights are standard make. He alone is the unknown quantity. His manner of manipulating his gun may be perfect, and his performance—poor. Many factors enter into the success or failure of a marksman, but chief of all these is judgment. It is likely that a similar condition at times handicaps the teacher's success in scoring educational bull's-eyes on the objectives which have been set up for her. It is not easy to know when one's objectives have been hit; no bell rings, no flag is flashed, and no telltale target sheet is spread out for use in studying the hits and misses. The teacher must understand that her health education program depends not upon aiming successfully once, twice, or three times, but upon the force with which she scores her objectives. Among these objectives are the following: (1) Fresh air; (2) nutritious food; (3) enjoyable exercise; (4) rest, relaxation and sleep; (5) sunshine; (6) cleanliness of food, water, utensils, body, and clothing; (7) health habits, attitudes, and ideals; (8) correction of remedial defects; (9) prompt medical attention when indicated; and (10) physical examinations at reasonable intervals. Subsequent chapters deal with these objectives individually.

The other side of the problem. Like everybody else, teachers must keep in mind that they themselves are objectives for man, mammon, and the microbe. Disease, accidents, temptation; emotions such as hatred, jealousy, and envy; false friends, too; all these, which by no means complete the list of the enemies of mankind, aim at you at one time or another. Unless you can build up some effective defense against these dangers that menace your health and life, your success in attaining the objectives which the health education programs set up as essential to the three-dimensional life is almost sure to be short-

lived. You will need to practice what you preach; you will need to take examinations as well as to give them; you will need to be first in health as well as in health instruction. All these things you will need to do if you expect to add your weight to the lever that is to roll the boulder of ill health out of the highway of life.

Corner stones vs. rolling stones. The corner stone of a building is of fundamental importance. So great, indeed, is this importance that in the erection of most public buildings the laying of this stone is attended with special and significant ceremony. A corner stone is a three-dimensional stone; like the worth-while life, it has length, breadth, and depth. A corner stone must have strength; too, it must be of adequate size, and it must have durability. Its shape must be such that it gives support to the structure above. Like the three-dimensional life that we have been considering, the corner stone must fit into the space which it is destined to occupy. It must fulfill its part in the architect's plan of the building.

In life, the Fates deal kindly with us. True, we have little, if any, voice in determining our particular niche in the structure of humanity at this moment, yet the fact remains that we are allowed the privilege of determining the importance of the particular niche we shall fill later in life. We can make three-dimensional stones of ourselves if we are willing to make the effort. So we can come to occupy corner-stone positions in life. Rolling stones do not make good corner stones; they are too easily overbalanced. Nor do they make good stepping-stones, either. As material for keystones they are useless. The best interests of society as well as of the individual are served by lives that possess breadth and depth as well as length. Society is best served by lives that have few if any irregular surfaces to be reckoned with in

constructing our social masonry; by lives that can stand strain and stress without grumbling or crumbling; by lives that add beauty as well as strength to the structure of humanity.

If we think of the seven objectives which the National Education Association Commission has set up, we shall find that they are just enough to serve our purpose if we use one for each of the six sides of our three-dimensional life, the corner stone of society. One of the seven objectives is, to be sure, left over. We shall not throw it away, but rather build it into the whole structure of life so that it will help to form the basis for all the other objectives. Of the seven objectives, we shall use Health for this purpose. That done, it makes little difference where the other objectives are placed so long as they are all included.

SOME SUGGESTED METHODS

Health Aims

Children and adults, too, are usually interested in anything that deals with aiming, throwing, and firing at a target. In primitive times man's life doubtless depended in part upon his skill in throwing stones and spears at his foes and at animals needed for food. Later, the bow and arrow, the tomahawk, the sling, the boomerang, and firearms were used as weapons for attack and defense, and later still as a means for sport or contests in skill. The present-day interest in baseball and other ball games is probably a development of this earlier necessity for, and interest in, good marksmanship. The teacher can use such a universal interest as a means of approach to certain interesting health lessons. The following outline shows a method of motivating such health education by the use of targets.

- A. Discuss the requisites of good marksmanship:
 - a. Practice (Someone has said "success is largely a matter of practice, and the rest of it is hard work.")
 - b. Steady nerves, confidence, a clear eye
 - c. Judgment in gauging distance, wind, and gravity
- B. Some marksmen who made names for themselves:
 - a. William Tell and Robin Hood
 - b. The Minute Men of '76

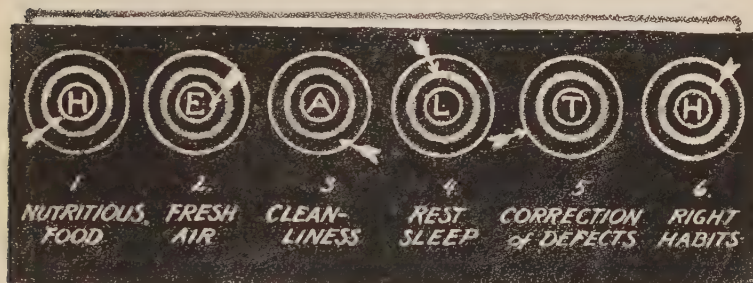


Figure 3. What is Your School's Score in Health Marksmanship?

C. Health Aims:

- a. Draw six targets, each about 12 inches in diameter, on the blackboard. Use yellow crayon if possible. Arrange the drawings side by side as shown by Figure 3. Place the capital letter H in the first bull's-eye, the capital letter E in the second, and so on, thus making the six targets spell HEALTH.
- b. Write a number under each target, as shown by the illustration. Ask the pupils to name six important aims in health. Assign an aim to each target. These aims might be as follows: (1) Nutritious food; (2) fresh air; (3) cleanliness; (4) rest and sleep; (5) correction of defects; (6) habits of right living. Let the pupils vote as to how often the average person usually hits a bull's-eye on each target. Or does he hit in one of the rings? If in a ring, in which one? As the pupils answer, the hits may be indicated by red crayon.

- D. Things to remember when aiming at Health Targets.
- Keep practicing: Don't quit after a few trials.
 - Keep aiming even if the shoulder does hurt a bit.
 - Study your successes and your failures.
 - Observe how others aim at these same targets.
 - Help the less experienced.
 - Hits count for little unless you hit hard.

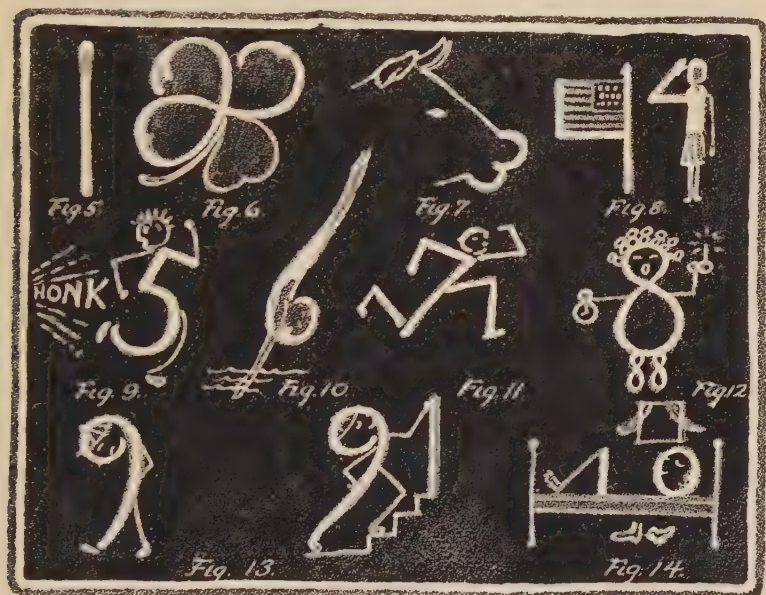


Figure 4. A Target

- E. You, yourself, are a target. See Figure 4 for the way to make Y O U into a target.
- Disease is aiming at you much of the time.
 - Accidents aim at you.
 - Temptation, jealousy, envy, and hate aim at you.
 - Your disregard of health habits aims at you.
- F. Some things that you can do to protect yourself.
- Avoid sick animals and sick people.
 - Practice health habits. (Discuss health habits with the pupils.)
 - Vaccination. The Schick Test and immunization for scarlet fever. Immunization against typhoid fever.
 - Be alert to escape accidents.
 - Correction of defects: Bad teeth, infected tonsils, adenoids, etc.

Health in Numbers

With a stroke or two of chalk one can easily transform almost any Arabic numeral so as to make it form the basis for an interesting lesson on some phase of health or safety.



Figures 5-14. Health Numbers

Ask some pupil to name any number from 1 to 10. Place the designated number on the blackboard and ask the pupils to tell what it suggests to them. For example, the figure 1 may suggest one tongue, one heart, one stomach, or any of the other single organs of the body. It may suggest one life, one language, one flag, one country. In any case, whatever is mentioned can be used as the basis for an interesting informal health talk.

Use a bit of red crayon to change the figure 1 into a match having a red head. (See Figure 5.) Remind the

pupils that although matches have heads, they do no thinking; when they are put into action someone else must do the thinking. Tell the class, also, that a match always loses its head when it is struck; no boy, however, can afford to lose his head at such a time. (This material may then be developed into a good lesson on self-control.) Matches are poor acrobats; they always light on their heads. (This can be developed into a lesson on fire prevention. Consider accidents to children from fires caused by Christmas candles, playing about bonfires, etc.)

The figure 2 will, of course, suggest two eyes, two ears, two legs, and many other things. Whatever is suggested may be developed into a discussion on either health or safety.

The figure 2 can easily be changed into a four-leaf clover. (See Figure 6.) Make a little talk about luck. Explain that people who trust to luck in matters of health and safety usually regret their heedlessness. He who trusts to luck is playing with danger and ill health. Such a person takes no proper care of his wounds; he plays with sick playmates; he takes only half a look when crossing streets and tracks; he relies upon *horseshoes* (luck) instead of *horse sense* for protection from accidents and sickness. Luck is a poor creditor.

The figure 3 suggests, among other things, three square meals a day; three out, side out (in a baseball game); the three Fates; the three-dimensional life; and many other topics.

As shown by Figure 7, a few strokes of the crayon will transform a figure 3 into a crude outline of a cow. This may lead into a lesson on milk and other dairy products.

The figure 4 readily suggests the four seasons of the year. As shown by Figure 9, it may easily be changed into

the outline of a flag; this will serve for the basis of a talk on health and patriotism. The figure 4 can also be transformed into a Girl Scout in the attitude of salute.

The figure 5 suggests the five special senses, the five fingers, the five school days of the week, the members of a basket-ball team, and other things, any one of which is suitable for use as the starting point of a health talk. As shown by Figure 9, the figure 5 may easily be changed into a person in the act of dodging an automobile. This may lead to a lesson on "jay-walking" and its more dangerous brother, "jay-running." Point out to the pupils that it is the sudden and unexpected act which results in most street accidents; dodging into the street is an example and one that occurs daily.

The figure 6 suggests the number of glasses of water that should be taken each day. As shown by Figure 10, the 6 may be changed into the figure of a boy diving. Use this figure as the theme of a talk on bathing; first, hands, next, face, afterwards, the rest of the body. This is the order in which a diver enters the water—if he dives well. Tub bathing calls for a reverse order of events; feet first, and so on.

The figure 7—a lucky number—suggests the days of the week, Rome's Seven Hills (and the steady growth and development of that city). It is a simple matter (as shown by Figure 11) to change the figure 7 into that of a boy running. This may lead to a talk on athletics—training without straining.

The figure 8 suggests the hour when little folk should go to bed. As shown by Figure 12, change the 8 into the figure of a child going to bed with candle in hand.

The figure 9 suggests, of course, a baseball team. See Figure 13 for the method of transforming the 9 into the figure of a boy striking out and making a home run.

The figure 10 suggests our own monetary system. As shown by Figure 14, it is possible to change 10 into the outline of a boy lying in bed. This may serve as an introduction to a talk on fresh air in the bedroom and long hours of sleep—before the call to breakfast, of course, not afterwards.

The above explanations are enough to suggest to the resourceful teacher many methods of using other figures as the basis for health lessons. It may be remarked that pupils seldom tire of this work; it stimulates their imaginations, presents an opportunity to introduce many bits of health information in an interesting way, and leads to home discussion, a splendid carry-over of the classroom lesson not only for the child but also for the parents.

Making a Health Bookmark

A very simple individual project for pupils in health work is the making of a health bookmark. Such a bookmark can be made of almost any material and in almost any shape. Figure 15 gives several suggestions.

The teacher should first of all talk briefly about bookmarks, their use, what they symbolize in the way of respect for a book and its teachings, the different kinds of bookmarks, and some way in which a bookmark may be made attractive by using appropriate pictures, verses, and colors on it.

A bookmark can often be so designed as to give significance to the object itself. For example, a health bookmark made in the shape of an oak tree or a pyramid may signify strength; one shaped like a wedge may indicate the entering wedge of success; one shaped like a hall clock may bear the caption, "It is time to practice health as well as to study it." Any number of designs for health bookmarks will suggest themselves to the resourceful

teacher, to pupils, and to the parents at home who may be called on for a bit of advice in the matter.

The teacher should bring out the thought that a book-mark is only a temporary affair. Education, on the contrary, is a permanent sort of mark. Further, education inspires people to make marks in life that will endure for

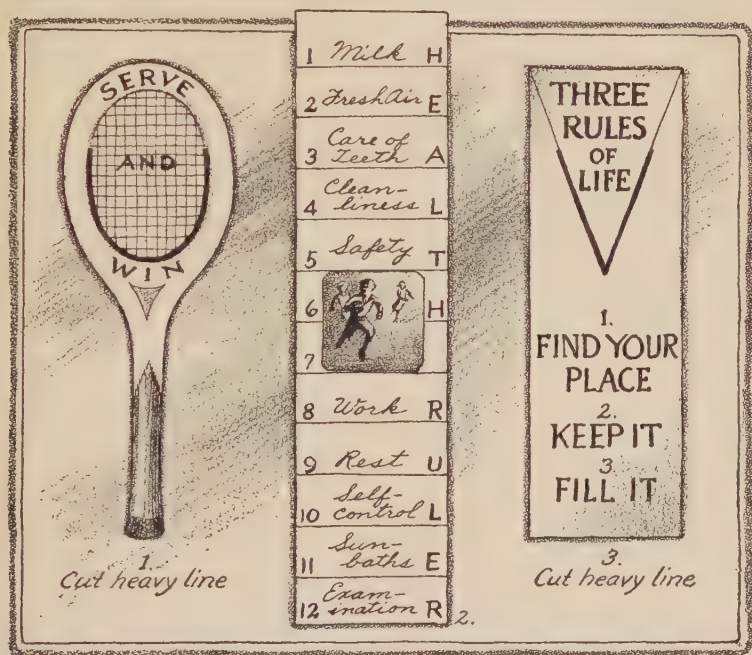


Figure 15. Health Bookmarks

a long time because the makers have been useful to society. It is a good plan to name several men and women who have made marks in life that give promise of enduring for centuries.

SUMMARY

The "three-dimensional life" has depth and breadth as well as length. The individual who has it is interested in

the expansion of life, not merely in its extension. The aims of such a life change with the years. The perspective of life changes, as do its values, its opportunities for service, and the relation of its different objectives to one another. In general, it may be said that where life expands normally—mentally, spiritually, and socially—there is a distinct change from the attitude of “My will be done” to that of “Thy will be done.” Health is of course an exceedingly important factor; it is the basis of all fullness of life. The body may not be healthy, but the mind surely must be so. One’s health should be preferably a three-dimensional health—physical, mental, and moral. Our problem in life is to hit our objectives, to hit them hard and repeatedly. Health for life ought to be the target at which we aim. In our zeal to attain our objectives, we should not forget that we, too, are objectives, notably for disease. It is well for us to sound a warning to one another to attend to the need for protecting health as well as promoting it.

Some Questions for Consideration

1. In your judgment, what is the relative importance of heredity and environment in longevity?
2. Granted that there is a big difference between *telling* hygiene to the pupils, and *selling* it to them, what suggestions can you make for improving the salesmanship ability of the health education teacher?
3. The Junior Red Cross emphasizes three things—service for others, worldwide friendliness, and fitness for service. How well, in your opinion, do these ideals fit in with a life expansion program?
4. Name some of the ways in which science is (a) prolonging life, (b) making life more worth living, and (c) developing opportunities for the service of mankind.
5. It has been said that “the parent is the key that opens the door to child health.” What are some of the things

that a teacher can do, in addition to her work in the classroom, to give greater effectiveness to the school's health education program?

6. One of the serious failures of health education teachers in the past was in teaching the subject, health, instead of teaching the object, the child. What are some of the ways in which the present-day teacher is interesting the child in himself and his relation to others, so that his point of view is "I am for health" rather than "health is for me?"

References for Further Reading

- Cabot, R. C., *What Men Live By*. (Houghton Mifflin Company.)
Sharp, W. B., *The Foundation of Health*. (Lea and Febiger Company.)
Williams, J. F., *Personal Hygiene, Applied*. (W. B. Saunders Company.)
Report of the International Health Education Conference, of the World Conference on Education, held under the auspices of the National Education Association. (Published by the American Child Health Association, 370 Seventh Avenue, New York City.)

CHAPTER III

THE A B C OF BODY MECHANICS

The human machine. Nature is the world's master machinist. She has been at her trade for countless centuries, and she has worked with unmatched persistency and patience. Nature's master achievement—the human machine—has never been equalled either in efficiency, ingenuity, serviceability, or intricacy. Her workmanship stands supreme.

The master machine. The human body is the machine of machines, par excellence. It is the only one of all which is so wonderfully designed that it can invent and create labor-saving tools and devices, and thus make its work easier, better, and more quickly accomplished. It can add to its own comfort and to its own enjoyment of life and nature. It can search out for itself the treasures of the universe.

Such a machine as that described is included in our legacy of life. From the calculating point of view of society, however, these machines do not all possess the same value, for, physically and mentally, not all human beings are born free and equal. To each of us, however, his own machine is priceless so long as sanity holds the steering wheel. For we should never forget that our bodies, even though defective physically, are still the most wonderful machines in the world. Many a human machine drawn up alongside the highway of human life because of a defective mechanism, because of physical defects of one kind or another, has overcome the most discouraging handicaps by means of mental application and the aid that science can give. It has been enabled

to get back into its place in the ceaseless traffic on life's highway and to travel onward to its destination.

No one dares prophesy from the *form* of the human machine how well it is going to *perform*. As has been said, "The things that count in life are the things you can't count." Some hidden source of infection, so apparently simple a thing as an abscessed tooth, may hopelessly cripple a human machine that looks fit for life's road. Another machine that seems almost worthless for any other than light work, may, with a bit of intelligent medical attention, prove equal to heavy tasks.

It is quite likely that thus far man has discovered only a few of the wonders of the human machine. We all need to obtain a new realization of the wonderful nature of the human body, and together with this realization we need also to have a deeper sense of responsibility for its proper functioning.

Our living machine. For nearly everybody machinery holds an interest that borders upon fascination. Nearly anyone can recall at least one incident of childhood days when he puzzled over a bit of machinery as simple, perhaps, as a toy watch, until the solution of its mysteries was sought by taking it apart. Out of this childish interest in mechanical toys came a desire to investigate other machines—the sewing machine, the lawn mower, the ice cream freezer, the automobile, and, finally, oneself.

Because there is so little opportunity to peep inside the human machine, to take it apart, to put it together again, or to alter it in any other way without unpleasant and sometimes distressing results, progress in learning the mysteries of the human machine at first hand has been slow. In many cases, conjectures and superstitious notions have been substituted for accurate knowledge of the body's processes. Ignorance lies at the root

of much of the present-day idle, morbid, and unwholesome curiosity about the physiology and hygiene of the human body. On the other hand, knowledge of the laws under which the human machine operates inspires a profound respect for Nature's masterpiece in the mechanics of living tissue.

The study of the machine. The study of physiology should result in making its students less introspective, provided emphasis is placed upon the operation of the machine as a whole rather than upon the operation of its separate parts. An understanding of the laws of the body should make people less superstitious and more scientific in their attitude toward the mysteries of life. The study of physiology should lessen also the influence of charlatans who prey upon their victims' ignorance of hygiene.

Knowledge of human physiology takes away morbid interest in the mystery of the natural processes of life and substitutes for it an interest in the mastery of those processes. Other things being equal, the person who has studied the structure and functions of the human body makes the best first-aid student.

What is of even greater importance, physiology forms the background for hygiene, a flexible sort of hygiene that can meet the needs of the body at the moment because it is not of the ironclad, rule-of-thumb type. Nor should we lose sight of the fact that physiology gives us a vocabulary which, at present, the public uses more and more in literature and conversation.

The present-day study of the A B C of body mechanics is interest-compelling. It inspires respect for the body, and it explains the "what" and the "when" and the "why" of health practices in a way that is wholesome and at times beautiful. For the facts of physiology

really may come to be regarded as beautiful, provided the teacher herself has an appreciation of the wonders of the human body, which are the greatest wonders in this world.

The approach in teaching physiology. Much of the pupils' interest in any subject depends upon the teacher's approach and manner of presenting her material. She must find the right approach, and, if necessary, she must make one. Failure either to find or to make a way is responsible for much of the pupils' lukewarm, quickly cooled interest in the study of the anatomy and physiology of the human body.

In studying the framework of the human machine, we are not interested in the names, descriptions, and locations of the two hundred and more bones that comprise the skeleton. We are vastly interested, however, in the role that the different bones play in the everyday adventures of life. It is plain, then, that an approach to the study of the skeleton is best made along the broad pathway of every healthy, active, growing child's interest in games and athletics, in social relationships, in the chivalrous service of humanity, in the ability to defend himself, and in the many other phases of youth's dreams of success in some line of endeavor. Thomas Carlyle called youth the glad season of life. We must make every effort to approach such an outlook on life with related interests if ever we hope to make our health education program function as it should.

The framework of the body. Having climbed to the heights, educationally, teachers should never pull up the ladder after them; they must keep in touch with the world in which their pupils live.

For instance, if we take the time to check up on the pupils' interest in the bones and joints of the human

machine, we learn that we can meet him on common ground by pointing out to him certain well-known relationships. We need to relate the skeleton to accidents—fractures, sprains, dislocations—in work, play, and recreation. We need to explain how bones and joints are affected in their growth, strength, and shape by disease and malnutrition. We need to point out the relation of bones to success and failure in athletics; long bones give greater stride to the runner, better leverage to the jumper, and greater range of motion to the baseball pitcher. We need to call attention to the effect of the bony structures upon stature, upon the contour of the features, and upon the protection of vital organs. We need to make clear that the skeleton gives man a greater degree of manual skill than any other creature can possibly attain—a fact of so great importance in the development of man's intellect that it is often said that the hand developed the mind.

The A B C of body mechanics. The proper working of the human machine involves the operation of much more mechanism than even those who know most about it are aware of. There are three main considerations, however, that we ought to keep in mind; those are adjustment, betterment, and care.

If the human machine is not properly adjusted, plainly it will not function at maximum efficiency. Adjustment involves posture, that is, emotional poise as well as physical balance, a proper disposition of the load which is placed upon the machine, and a consideration of environmental demands.

The machine is rare, indeed, that cannot be bettered in some respect. There is usually room for improvement in all human machines. The finer movements of the body, of the hand, for example, must be intelligently practiced for a long time if any high degree of skill is to

be attained. Sometimes physical betterment must take the form of corrective work—correcting defects of the spine or feet; exercising weak muscles; extracting or filling decayed teeth; removing diseased adenoids or tonsils.

Whether a machine be of flesh or of steel, its life of service depends upon the care that it receives. Care increases the length of a machine's wear; it increases the quality and the quantity of work; and it reduces the number of accidents to a minimum.

Every teacher is an instructor in body mechanics. Having served an apprenticeship, the teacher takes her place as an instructor in the busy machine-shops of Life. Many lessons are to be taught, but few will be more important than those which have to do with the A B C of body mechanics.

SOME SUGGESTED METHODS

Machinegrams

The human machine has no "trade-in" value.

Carbon in the human machine comes from the waste products of life.

Alcohol is a poor anti-freezing mixture for the human machine.

Selected or original epigrams are helpful for calling attention to a point of the lesson that one wants to impress upon the pupils. Place the epigram on the blackboard before the class reaches school in the morning. It will then serve as an introduction to the lesson that is to be taught later. To stimulate attention and thought, a word may be omitted from the epigram. When opening the health lesson, the teacher may use the epigram as an approach to the presentation. The pupils are in some measure prepared, even if they have had no definite assignment.

The epigram gives the pupils a message to take home.

That message will often make the family think for a moment about some phase of health. Children usually enjoy making epigrams of this sort.

The Human Machine on the Highway of Life

The following outline contains material for use in teaching the care of the human body. A good way to

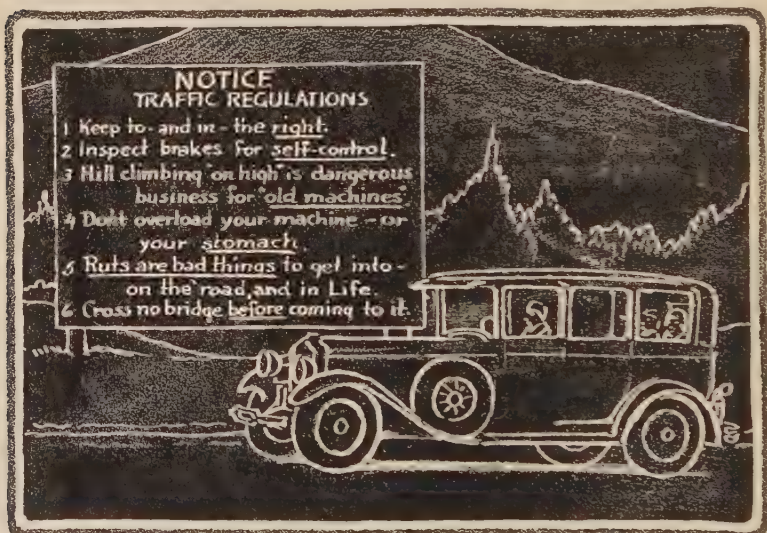


Figure 16. The Human Machine on the Highway of Life

interest pupils in the lesson is to draw a large cartoon of an automobile on the blackboard (See Figure 16.), using color on the wheels or the body. Some teachers bring a large picture of an automobile to class. A small toy automobile also secures attention effectively. Numerous analogies can be drawn between the human machine and the commercial automobile. The following topics bring out the more important lessons.

1. **Traffic regulations.** We should not only keep to the right; we should also keep *in* the right. Moral

principles should govern the driving of a bargain as well as the driving of an automobile. Discuss the ethics of travel on life's highway.

2. Using the brakes. The brakes (self-control) on the human machine grow stronger with use. This is not true of any other machine. Discuss self-control in anger, in hunger, and in temptation.

3. Taking hills on high. Call attention to the folly of trying to take life's hills on high. Doing so is especially dangerous for people who have passed middle life. Sound the warning: Slow up or blow up. Emphasize moderation.

4. The machine's load. No one can measure the load a human machine is carrying; it may include worry, sickness, and sorrow. Be slow to judge when the human machine makes little progress. Get the facts first. You can do this only by making a sympathetic approach to the problem before you.

5. Motion and emotion. All human machines experience emotions—happiness, sorrow, love, hate, and others. It is just as necessary to control emotion as to control motion; otherwise the human machine wrecks itself, and perhaps others, too.

6. Models. Discuss here the various models of automobiles—the roadster, the truck, the sport car, the service car, the touring car, and others.

7. Service stations. The human machine carries its own repair kit. Nevertheless it must at times go to service stations—the dentist, the doctor, the dinner-table—for attention and necessities.

8. Ruts are dangerous. Discuss the danger of getting into a mental or physical rut. Name habit ruts and business ruts that keep people enslaved as though they were chained.

9. **Being tagged.** Disease and accident "tag" us when we violate laws of health and safety, and sometimes when we do not do so. The fine that is the cost in ill health is more serious than ordinary court summons and costs to the automobilist.

10. **Squeaks and pains.** The wise driver has his ear alert for sounds which indicate that his car is not working properly. Drivers of human machines have even greater need to be on the alert for signs and symptoms which indicate that something is wrong. Joint pains are not to be dismissed as "growing pains".

11. **Crossing bridges.** The human machine is the only one that crosses bridges before it reaches them. Discuss the wear and tear of worry on the body. Usually, when we wait and investigate, we discover a detour that makes crossing the bridge unnecessary.

12. **Re-tiring.** This may be made a lesson on sleep. The human machine should retire every night.

Numerous other topics pertaining to machinery, to either an automobile or the human machine, may be used in the manner indicated above. Among such topics are these: Fuel, the frame work of the machine, cleanliness, the self-starter, headlights, and shock-absorbers.

A Project: Literature Advertising the Human Machine

Show the pupils some booklets that advertise a well-known automobile. Erase or cover up the name which identifies the company that distributes the advertising so that no one can accuse you of making the school a medium for commercial propaganda. This small point may be important if a rival company feels unfriendly towards the work of the school. Such precaution should be taken whenever advertising material is used in the school in any way. Schools must not be exploited by

commercial interests, even though those interests do help to promote improved instruction.

Have each pupil prepare a booklet advertising the human machine. The booklet should point out the advantages of the human machine and show how it excels all industrial machines in the variety of its work and its capacity for improvement. Indicate its span of usefulness as compared with that of other machines. Mention

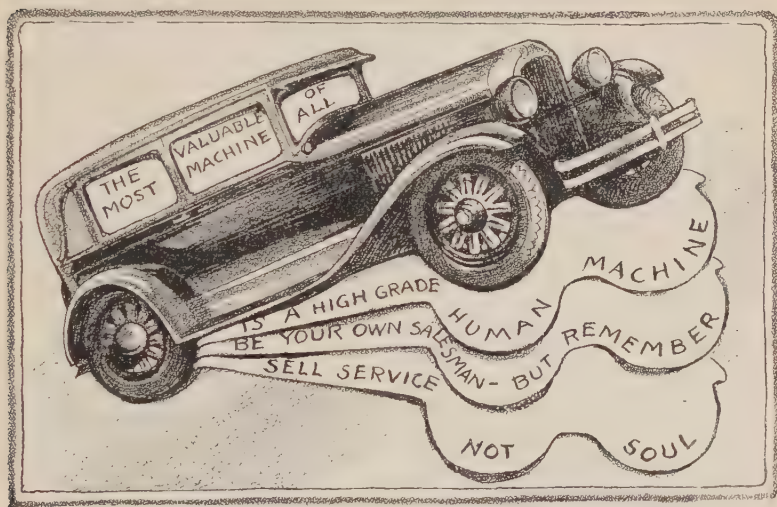


Figure 17. Advertising the Human Machine

its special features: The self-starter, the self-repair arrangement, the automatic cooling system, the self-oiling springs, etc. The booklet may be cut to the shape of an automobile, or cut in some other appropriate way. Pictures clipped from magazines make it more interesting. A project of this kind offers opportunity for originality; it promotes coöperation in the home; it causes children to give serious study to the human machine. Figure 17 gives further suggestions regarding the project.

Blackboard Device for Teaching Health

Use yellow crayon to make a large capital letter A on the blackboard. Intersect it by lines that radiate in star formation as Figure 18 shows. Ask the pupils to consider the affairs of life in which they would prefer to be marked A if they were to be scored. Nearly everyone, for example, would want an A in health. Many would

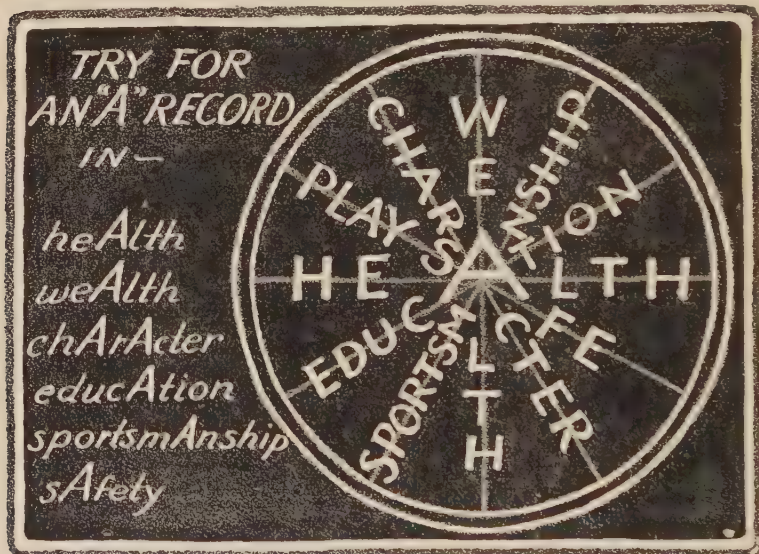


Figure 18. "A" Grades in Life

doubtless aspire to an A in wealth. Excellence in sportsmanship might be the goal of many boys and girls. Character surely ought to be in the list; it should receive an AA. Safety would probably secure a heavy vote in schools where the teacher has taught accident prevention well. Education should have a place in the list; it would probably be named among the first. Although the blackboard design is not large enough to include courage, reputation, leadership, and other desirable qualities, those

are to some extent covered by the six qualities first mentioned.

As each goal is named, print it on one of the radiating lines. Enclose the whole with a circle and so convert it into the outline of a steering wheel. Then make clear in your talk that these goals should be on the steering wheel of every human machine.

A Health Game: The Automobile Race

This may be held either indoors or outdoors and so give opportunity to correlate the activity with the health lesson. There are several ways of conducting the race; the following is typical of all.

The unit in the relay race is the row. Seat the class so that each row contains an equal number of pupils. If each team cannot have the same number of runners, some player on the team having fewer may run twice for his team.

Rules of the race. After teams have been made up, captains appointed, and team names chosen (use the name of some automobile for a team name), the teacher announces that the race is to be run over the Hills of Health Course, the Safety-First Turnpike, or the First-Aid Track. She may use other significant names; for example, the Streets of Good Sportsmanship Town.

Each captain then writes on a slip of paper the most appropriate "healthgram" he can think of (it may be either original or one that has been given in class), folds the paper, and holds it ready to pass on to the runner who takes up the race after he himself has completed the first lap of the course. Pupils must be cautioned to keep their feet out of the aisles so that the runners will not be tripped during the race.

How to conduct the race. The race course is once

around a single row of seats. Since each team needs two aisles to run in, not all rows can race at the same time. The rows are first numbered off. Odd-numbered rows race first; even-numbered rows race next. The winners in each of the two races, race each other for the room championship. The last player in each row stands in the aisle to his right. At the command of the starter (the teacher, or a pupil who cannot take part in the game), he runs around the row in which he belongs as fast as he can. He returns to his seat and enters it at the side from which he started to run. At the same time he hands the folded healthgram to the player seated ahead of him. The latter then rises, runs around the course as did the first player, then passes the paper on to the third runner. This is continued till each pupil has raced once around the course. The race is won by the team that first completes the event.

After the races, discuss the healthgrams and let the class decide by vote which team had the best health message.

Note: If the classroom has movable desks, require pupils to take three walking steps at all corners so as to make the race safe. It may be necessary to have a walking race. Reasonable safety should receive first consideration always.

SUMMARY

The human machine is the most wonderful machine of all. It can adjust itself to its work, its environment, its fuel, its likes, and its dislikes. As a living, functioning, conquering machine of flesh and blood, the human body cannot be equalled merely from the point of view of interest alone. As a subject to be studied from the point of view of animal and mineral matter, it is usually uninteresting to healthy, active, carefree boys and girls.

Physiology should teach the "why" of hygiene; it deals with life. When presented as this sort of subject, it interests; when lifelessly taught as a lifeless subject it is of small interest. Teachers are to blame, and not the subject, if physiology commands little or none of the pupils' interest.

Some Questions for Consideration

1. What are some of the dangers of trying to make a super-normal human machine out of a normal one? Do you consider that forcing genius is an example of this?

2. Prepare copy for six warning guideposts to be placed along the Highway of Life.

3. Do you see in some of the present day attitudes toward health and strength any danger that the body will be glorified at the expense of the mind and spirit? Explain.

4. Anatomy and physiology ought not to be taught as a drab background for health, but rather as an interesting, romantic and colorful part of the picture. These two subjects are full of interest to the teacher who knows the history of their development. What are some of the ways in which you have been able to interest pupils in the structures and functions of their bodies?

5. What steps do you take to encourage those who are physically handicapped and whose machines will never be able to run at normal speed or with normal efficiency?

6. In the early days of man, size and strength were big assets because life often depended upon them. Have our needs changed so that they no longer play such an important role in life, or is there merely a change of emphasis from selfishness to the service of others?

References for Further Reading

Howell, W. H., *The Human Machine*. (National Health Series.) (Funk and Wagnalls Company.)

Hough, T., and Sedgwick, W. T., *The Human Mechanism*. (Ginn and Company.)

Keith, Sir Arthur, *The Engines of the Human Body*. (J. B. Lippincott Company.)

Logan Clendening, *The Human Body*. (Alfred A. Knopf Company.)

Williams, J. F., *Healthy Living*. (The Macmillan Company.)

CHAPTER IV

NATURE'S FIRST LAW

The law of self-preservation. For centuries Nature's law of self-preservation has stood on the statute book of life unchallenged by any creature except man. He has broken the law again and again. Sometimes he has ignored it in working for the immediate good of others; sometimes he has made himself a sacrifice in the cause of advancing civilization. Mankind honors such sacrifice, but Nature is relentless and recognizes no excuse for breaking the law. In some way she always exacts a physical penalty for the breaking of her law.

The largest group that breaks Nature's law of self-preservation is composed of those who, either from ignorance, carelessness, or improvidence, abuse their bodies by spending their vitality and health in ways which give no equitable return to them or to society. The penalty for such as these ranges from a sick headache to death, and no person escapes a fine of some sort.

This group includes us and our friends. If our experiences make us more observant of the law in the future, they are worth while. If, on the contrary, seemingly light punishment leads us to flout the laws of life, we set for ourselves a trap from which we can never escape.

Protection as self-preservation. There are a great many phases of Nature's first law, all of which are important. Most of them are considered under various chapter headings in this book. Here, emphasis is placed upon certain phases of protection, especially upon clothing and shelter.

Man has always had to protect himself from the ele-

ments. He has done this by finding some sort of shelter **or by** making one—a cave, an igloo, a tent, a house, or some other dwelling place. He learned how to make fire and to use it to keep himself warm. He has also clothed his body.

The need for clothing to protect the body from injury brought about a further development in apparel; it originated the shoe. No doubt the hat was developed to protect the eyes from the glare of the sun, and as a protection against the sun's heat. Man's inventive genius has discovered new ways of protecting the body from the elements and from injury, as we shall later learn.

Clothes and the seasons. It is a question whether more ill health results from failure to dress warmly enough, or from dressing too warmly in winter. Clothes do not make heat; they merely retain the heat of the body. If the body is not warmly clad, too much heat is lost; the result is discomfort and possibly chills; if conditions are right, sickness. Heat is lost more rapidly when the clothing is wet. This explains why we chill more easily when shoes or garments are damp. It is a wise health precaution to keep the body dry and comfortably warm. If, however, the body is dressed too warmly, the skin loses much of its power to regulate automatically the amount of heat the body continually gives off.

Physiologists say that underwear worn during winter and summer ought to be of about the same weight. Provision for cold weather should be made by putting on heavy outer garments when outdoors, not by putting on heavy underwear. When adequate heating is provided, the indoor temperature is about the same during winter and summer; hence, there is really no need for heavier winter underwear during the winter season. An increas-

ing number of people now use two weights of underwear, a thin summer garment and a winter garment slightly warmer. The latter, although not nearly as warm as the old-fashioned winter underwear, makes a common-sense solution of the problem. This sort of underwear gives more comfort, and allows the skin to be more active. It causes the body to perspire less indoors during the winter, and it coddles the body less.

We can more readily accept the new point of view in the matter of health and clothing if we bear in mind that protection from the weather means much more than keeping the body warm and the feet dry. Winter colds and other forms of respiratory disease result from exposure to infection and not merely from exposure to the weather. Other factors that operate in producing winter colds are poorly ventilated rooms, lowered physical resistance such as results from loss of sleep, excessive work, and over-eating. All these conditions are of importance in causing people to contract colds.

Most important of all is the germ. Sometimes we get the infectious organism from someone else. Sometimes the cold is caused by a germ that has been present in the mouth for some time. It has awaited the time when, aided by the weather, it could start into activity.

Ventilation and health. Most colds are contracted indoors; many of these come from friends who pass their colds on to us by way of a kiss, a handshake, or a confidential word spoken close to our faces. Sometimes a hearty laugh acts as the agent for transmitting the germ. In winter people gather indoors. It is true that when steam pressure goes up, vitality goes down. Hot rooms are not invigorating. It is not difficult to understand, therefore, why there are more colds in winter. We take our social activities indoors where it is warm, where

the air is poor, and where the exchange of respiratory secretions is made at short range. If more people would realize that it is better to lose heat through open windows than to lose health, there would undoubtedly be fewer colds, less influenza, and a decrease in the number of pneumonia cases during winter.

There is need here to point out that the secret of healthy indoor living is not merely the use of the window pole. People must make other adjustments as well as those pertaining to ventilation and heating. In considering the relation of ventilation to health, we must keep in mind the general principles mentioned in the paragraph on clothing; namely, the health of the body depends upon internal conditions as well as upon external conditions such as heat and air. We should not only aim to have living conditions right; we should also aim to live right if we expect to round out our health program.

The cost of colds. It has been estimated that the common cold costs the people of the United States, in wages alone, something like two billion dollars a year. From available figures it is safe to say that every person averages two colds a year. Authorities estimate that the total time lost on account of colds by the forty-one million workers in the United States (last census) annually amounts to nearly 146,710 years of lost labor. One can scarcely estimate the expense of two colds a year, per person, in doctor's fees, medicine, nursing services, and subsequent illness which is a direct consequence of these colds. The cost is enormous, but since it is distributed among many, the cost to the individual usually seems relatively unimportant. It is never unimportant, however, to the unfortunates who develop sinus trouble, middle ear trouble with impaired hearing, or, perhaps, mastoiditis or tuberculosis.

The United States Public Health Service, which has been making a special study of colds, offers the following rules for preventing them.

Don't forget to wash your hands before eating.

Don't forget to keep your teeth, mouth, and nose clean.

Don't wipe your nose on your hands or your sleeve. Use your handkerchief.

Don't wet your finger when you turn the leaves of a book.

Don't wet the end of a pencil in your mouth.

Don't put money or pins into your mouth.

Don't spit on the sidewalk or the floor.

Don't take anything that may have been in somebody's mouth.

Don't sneeze or cough in anybody's face.

Don't let other people sneeze or cough in your face.

Don't forget that you are your brother's keeper. If he gets sick, it may be your fault.

The following advice is offered to those who contract a cold even after following the above precautions.

When you have caught a cold, serious consequences may develop with startling rapidity. Quick and prompt treatment is necessary. You cannot begin to treat a cold too early.

Go to bed and rest. Take a mild laxative and eat light, wholesome food. Drink six to eight glasses of water a day. Ventilate your room.

If you do not improve rapidly, if you find that you have fever, or if a cough develops, call a doctor.

Protection for the feet. It has been well said that the greatest necessity in all walks of life is foot comfort. The army knows the importance of giving soldiers properly fitted shoes. The United States Postal Service understands the necessity of having the shoes fit the work as well as the worker. Police departments equip their men with comfortable, durable, and suitable footwear. The athlete's success depends as much upon his shoes as upon any other single factor. For jumping he has one type of shoe; for sprinting, another type; for

football, still another type. Serviceability is the one consideration in work and in competition.

In many walks of life, however, serviceability takes second place: there, style, vanity, and habit are determining factors. In fitting the foot, pride has a way of outwitting the advice of the shoe salesman and the good judgment of the purchaser. We all know from experience that the best footrule measures comfort as well as inches; it satisfies the foot regardless of the head. When possible, shoes should be worn on the two-shift plan; one pair should rest while the other pair is being worn.

Stockings are an important consideration in foot comfort; if too large they may wrinkle and so cause discomfort or even blister the feet. Tight stockings interfere with circulation, tend to make the feet cold, and, to a slighter degree, have much the effect of tight shoes. Truly, we all have to toe the mark in life. It is well to know that we can run our race better if we first mark the toe, that is, give it plenty of room at the front of the shoe and on the inner side.

Clothing and circulation. Of all the different parts of the body, the top, middle, and base of the human frame—in other words, the head, the waist, and the feet—can least withstand constriction such as comes from tight clothing. The effect of tight shoes upon the feet and the rest of the body has already been mentioned. Tight hats undoubtedly have a harmful effect upon the nutrition of the hair, by interfering with circulation. Headaches from tight hatbands are common. Tight collars have a bad effect, too, as a cause of headaches. Not long ago the tight corset was regarded as an enemy of health. Fortunately, present-day fashions have made it possible for the waist muscles to get the exercise they need, and for the lungs to expand more freely. The belt usually has

no serious effect upon the circulatory system; if too tight, however, it may interfere with the digestive organs and so produce discomfort. If used as an abdominal support, the belt may weaken waist muscles and lead to digestive disturbances.

A good guide in determining whether a shoe, or a belt, or a hat is too tight is that of comfort. Another is the impression made by those articles upon the underlying tissues of the body. A tight belt leaves its impress. Tight garters sometimes cause enlargement of the veins of the leg, but usually other factors besides garters are also at work to produce this condition. The first essential of clothing should be comfort. If this is persistently ignored, we may expect to pay a penalty of some sort. Everyone should make proper selection of suitable clothing an important part of his bodily care.

SOME SUGGESTED METHODS

A Project: A Class Calendar

Tell the class how ancient peoples kept time, and include something about the origin of our calendar. Comment upon the old-time Farmer's Almanac with its wealth of information. Many pupils will know something about current medical almanacs of wide circulation. These find their way into many homes where they are eagerly read. Their contents are accepted as being true, even though such almanacs are frowned upon by the medical profession.

Explain to the class that you want to make a calendar for use in the school. This calendar is to have twelve different designs, one for each month, and thirty-one different illustrations, one for each day. Each design and illustration should be on a separate piece of tag board about 8 by 12 inches in size. Each pupil is assigned his share of the project. The calendar is to be displayed

before the class each day of the school year, thus presenting a lesson of some sort, a health subject, a safety idea, or some other topic that pupils select.

The pupil who prepares the card for the first day of the month may select any topic; for example, safety.

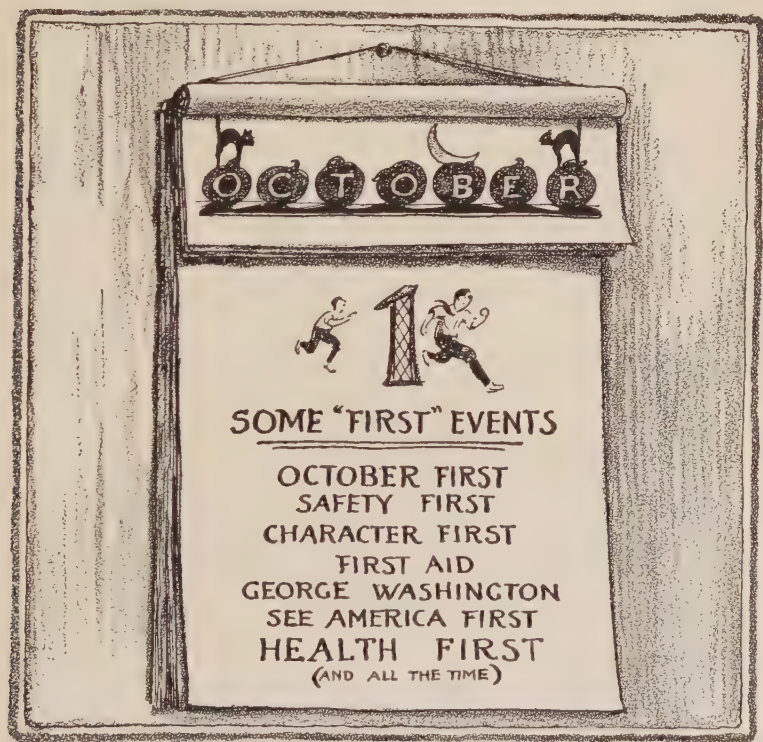


Figure 19. A Class Calendar

On his piece of tag board he may letter and color a large figure 1. Illustrations relating to the topic, cut from magazines or newspapers or gathered from other sources, may then be carefully pasted on to the tag board so as to make an attractive poster.

The cards for the remaining days of the month may

be similarly contrived. The subjects selected will, of course, differ, but they will include such common topics as cleanliness, food, sleep, exercise, balanced diet, and so on. To some extent the matter used will be duplicated, but in the end there will be enough difference among the cards to make them all interesting and instructive.

The cards representing the twelve months may be worked up as are those representing the days. These, and the cards representing the days, may be bound together with ribbons. The proper calendar cards should be on display in the classroom throughout the period that they represent. The care of the calendar may be left to a pupil.

A project of this kind carries over into the work of the entire year. Further, it is a daily example of what pupils are able to do. (See Figure 19 for typical calendar cards.)

Healthgrams

(For use on the blackboard)

Avoid the chill and escape the pill.

The danger of contracting disease in a public place should be the city's concern as much as the danger of fire.

The sneezer who sneezes all over others may have a cold in his head but he hasn't much else.

Dodge disease signs as you would a wet paint sign.

Wet feet—wet nose.

Blackboard Work

1. **The results of a chill.** In connection with the lesson on colds, print the word CHILL on the blackboard. By striking out or erasing the CH show that chill becomes ILL. Discuss the danger in wearing damp clothing, shoes, and stockings if one is not exercising; of sitting or lying in a draft; of becoming overheated and then chilled. Prefix P to make the word PILL. Discuss pills and other medical measures; for example, ventilation, liquid diet,

rest in bed, separate dishes to avoid danger of infection, and so on. After the PILL comes the BILL. Sometimes, unfortunately, we have to write the word KILL. The word KILL is discussed, not because of the pill, for modern medicine is thoroughly scientific, but because of the virility of the infecting organism.

2. **Making a health pill.** Discuss the making of pills by machinery. Tell how pills were made by hand in olden times. Explain the great care that is always taken to use fresh ingredients and correct amounts of ingredients in making pills (and all other kinds of medicines). Describe the hygienic handling of medicines to insure their cleanliness.

Ask the pupils to help you make a health pill. Draw a large circle on the blackboard to represent the pill. Have pupils name some ingredients that may be used in a health pill. The first may be nutritious food. Write the word FOOD in the circle. Pupils will usually quickly offer to name other ingredients, for example, sunshine, fresh air, sleep, care of the teeth, and such. Save PLAY for the sugarcoating of the pill. Explain that the maker of a health pill must mix all the ingredients with MILK and use plenty of WATER afterwards.

Pupils should be encouraged to write the directions for using a health pill. This task may be the assignment for the next lesson.

3. **Getting shoes that fit.** Explain the importance of fitting the shoe to the foot rather than of fitting the foot to the shoe. Make clear that people whose occupations require much standing need well-fitting shoes.

Draw six outlines of footprints on the blackboard. Have them leading toward a pennant lettered RACE STARTS HERE. Explain to the pupils that different steps are necessary when one starts to get the proper

shoes for this race, and that everyone has to run this race of life. If pupils are unable to give better suggestions, the following may be used as names for the various foot-prints (or steps) drawn on the blackboard: Clean and well mended stockings, shoes of ample width, shoes longer than the foot, heels of reasonable height, rubber heels, shoes having a flexible shank.

4. Charting the course of pneumonia. Draw thirteen perpendicular lines on the blackboard, each about 18 inches long. Space them 4 or 5 inches apart. Name the first column August, the next, September, and so on through July. Show by a curve how the death rate from pneumonia mounts from 27.5 per 100,000 people (in August) to 168.7 per 100,000 (in March). March is the year's most dangerous month for pneumonia. The curve begins to drop in April and gradually returns to the low level it had in August.

This chart shows that the danger of pneumonia is more than twice as great in March as in August. Explain that poor ventilation, overheated houses, close contacts among people, lowered vitality, and exposure to the cold and wet of winter are factors that make pneumonia so feared.

Home Work

Have each pupil make an outline drawing of the right foot and of the corresponding shoe. Make the outline of the foot by marking around the imprint made by the wet foot on a sheet of brown wrapping paper. After the paper dries, cut out the outline. Place the shoe on another sheet of paper, and get its outline by marking around it. Cut this out.

The pupil should place his initials on each outline, and then bring them to class. Have pupils try to fit the outline of the foot into that of the shoe. Note whether or

not the foot is cramped. Also note the shape of the foot and that of the shoe. Do they correspond in general outline? Make the point that a shoe should never be tight.

A Device: "Foot-Notes"

Make a ten-page booklet, having leaves cut out in the shape of a foot. The shape of the different leaves should vary according to the lesson one wants to teach.

On the first page show a baby's foot. This page should carry printed matter to the effect that the baby's foot needs room for growth and space for exercise. Moreover the baby's shoe must be flexible so that the foot may get exercise. Emphasize the point that the first step in life's journey should be a step in the right direction and in the right kind of shoe.

Another page should show how a tight shoe deforms the foot by squeezing the toes together. A good "foot-note" for this page should be outlined to show such conditions as blister on the heel, a corn or a bunion, an athletic foot, an infected toenail, an injury caused by stepping on a piece of glass, a nail, or other sharp object, a wet foot, a comfortable foot.

Each "foot-note" holds a lesson for the class. If properly worked up it holds the pupils' attention.

The foot is an important part of the body. It has been said that we begin at the foot in almost every worthwhile success in life; the outstanding exception is the digging of a well.

These "foot-notes" on the care of the feet can be made helpful if they are made with a touch of humor and with regard to local conditions and sentiment.

Correlation

The topic of clothing may be correlated with geography by having pupils (1) locate the sources of the mate-

rials commonly used for clothing; (2) describe the dress of people of various countries and give reasons for the clothing which they wear; (3) explain the relation of occupations to modes of dressing.

The topics may be related to history by having pupils describe the clothing of their own ancestors and of people of various epochs.

The topic may be related to physical education by having pupils explain how clothing worn by athletes (1) permits freedom of movement; (2) gives protection, as in football; (3) helps to maintain position (spikes on running shoes, rubber soles on gymnasium shoes).

The topic may be related to arithmetic by having pupils compute the amounts of materials needed for making clothing of various kinds and by computing the costs of clothing.

This topic may also be related to home economics and even to art work.

For English work, have pupils write a paper on the evolution of the shoe or on various types of footgear. Write to manufacturers of well-known shoes for literature and for interesting descriptive posters.

Debate. Resolved, That it is of greater importance to wear comfortable clothing than to be in style.

SUMMARY

An important phase of Nature's first law, the law of self-preservation, is that which deals with protecting the body from physical discomfort, injury, and illness that result from an unfriendly environment. The chief artificial protections of the body are clothing and shelter.

Man's inventiveness has enabled him to adjust his environment to his physical needs to a certain degree. By means of fire, clothing, and shelter he makes an

environment that meets his requirements. Heavy clothing and heated houses cannot altogether compensate for the lack of resistance that results from reduced physical activity.

Not only the big muscles of the body but also the skin must be given opportunity for exercise. Tight clothing of any kind, and especially tight, ill-fitting shoes, not only cause physical discomfort but prevent our bodies from being as serviceable to us as they might otherwise be.

We should use reason in protecting the body from seasonal changes. This involves using judgment in selecting clothing of weight and texture suitable to the weather and to the wearing demands of work and play.

Some Questions for Consideration

1. In what respects do we dress with more attention to the hygienic needs of the body than in former years? In what respects, if any, is the converse true?

2. As between clothing and shelter, which do you consider the more pressing problem in our health education programs?

3. What are some of the reasons why "soft living leads to hard colds"?

4. Name some of the ways in which man warms himself when he feels cold. Which of these methods, when unwisely regulated, has been instrumental in increasing respiratory disease? What steps should be taken to insure man a comfortable and healthful indoor temperature?

5. In the evolution of clothing, gloves and hats probably came comparatively late. What do you consider to be their merits? What, if any, are the objections to them?

6. The white man's customs and practices have been both helpful and harmful to the Indian. Which have been harmful? Which helpful?

7. What do you think of the value of cold baths when there is no circulatory reaction in the skin, and no feeling of warmth following a brisk drying?

8. One of the difficulties in properly regulating the tem-

perature of the home, where there are elderly people in the family, is the lowered heat-producing powers of the aged. If the living room is kept at a temperature that is comfortable for them, it may be too warm for younger members of the family. What partial solution to this problem have you to suggest—one that is fair to all concerned?

References for Further Reading

- Carpenter, F. G., *The Clothes We Wear*. (The American Book Company.)
Tolman, W. H., *The Hygiene of the Worker*. (The American Book Company.)
Woolman, Mary S., *Clothing: Choice, Care, Cost*. (J. B. Lippincott Company.)
Literature of The Cleanliness Institute, 45 East 17th St., New York City.
Bulletins of state agricultural colleges, of farm bureaus, and of the United States Department of Agriculture, Washington, D. C.

CHAPTER V

THE DEBIT SIDE OF LIFE'S LEDGER

Bookkeeping in health. The present century has seen great advances in the field of preventive medicine, and by this progress the protection of health has been increasingly possible for nations and individuals. For centuries the debit side of life's ledger was the more active side. Entries there were written in red, in the blood of battle against man's enemies and against disease. The total of those debits was stupendous. To all this cost in individual lives was added loss to society in productiveness. Disease, famine, and other disasters levied upon humanity a terrific charge in loss of labor. The wonder is that mankind escaped physical bankruptcy.

Why was not that the case? Because Nature gave humanity a rich heritage of vitality. Civilization has been able to draw upon this in meeting the physical cost of living despite an unfavorable environment. Man has succeeded admirably in carrying on the business of living under handicaps which at times have been so great as to threaten his extinction. As we have seen, his average life-span has been increased from nearly twenty years, the average for the sixteenth century, to fifty-eight years, the average life-span in America today. The increased life-span is largely due to the development of preventive medicine and public health measures. Nowadays life is invested more wisely. Health bookkeeping is now a system that includes a periodic balancing and auditing of accounts, and the debit side of the ledger now shows fewer and smaller entries.

Experiments grow out of experience. Mankind's costly

experience with disease has served him for experiments. These experiments have enabled society to control the scourges of humanity and in many instances to conquer them. The enormousness of disease and its costs were its undoing. Man put on his thinking cap and laboratory apron, worked hard and long, and with surprising success, discovered first one way and then another of worsting his enemy. Today, ill health is being put to rout along wide sectors of the battle front. Armed with weapons it has invented, and equipped with protection it has perfected, science is at many points bending back the line of battle. Even yet, however, we are not meeting with full success in the struggle against disease. This is due to various reasons.

Production and transmission of disease. There are three well-defined types of disease: (1) Bacteriological; (2) nutritional; (3) degenerative. Tuberculosis is a bacteriological disease; rickets is an example of a nutritional disease; Bright's disease of the kidneys is a degenerative disease. The last two are not communicable; the first is.

Bacteriological diseases are caused by microscopic organisms, either plant or animal. These organisms are called microbes, bacteria, and germs; the terms are synonymous. The French scientist, Louis Pasteur (1822-1895), demonstrated that germs cause communicable disease. They produce poisons called toxins and endotoxins. The poisons cause disease unless the host, the infected body, possesses immunity from them, or unless the host's white blood cells (phagocytes) attack the germs so vigorously that they are destroyed before they manufacture enough toxin to cause disease. Plainly, then, susceptibility to communicable disease depends in part upon the number and strength of the invading germs and in part upon the body's power to resist their attack.

Germes of the same family are not all equally poisonous (toxic). A person whose body has been invaded by weak germs may resist attack so successfully that no disease results, or, if it does result, it may be mild. Another person, whose body has low resistance to infection, may become seriously ill from a similar attack.

Germes thrown off in the excretions of a diseased person who is only mildly affected by a disease can infect another person, even seriously, if conditions are favorable. Mild cases of infection are quite as dangerous to a community as are severe cases.

Germes have no power of their own to pass from one person to another. They must somehow be carried. Germes enter the body in food, water, or air, on objects placed in the mouth or nose, among them fingers, pencils, and eating and drinking utensils; through abrasions and punctures of the skin caused by infected objects, animals, or insects.

How Nature fights disease. From earliest time the human body has struggled against disease. Each of the contestants developed its own methods of attack and defense as best it could. Always it has been a case of give and take between the body and its microscopic enemies. Sometimes the one, sometimes the other, held the upper hand. For thousands of years man was compelled to fight disease enemies single-handed; at the same time they were fighting under cover and unseen.

In defending itself from disease organisms, the human body has had the invaluable service of the white blood cells (phagocytes) and of certain properties in the blood which lessen the poisonous effect of the invading germs and in some cases destroy the germs themselves. Phagocytes seem to have a special appetite for disease organisms; in some mysterious way the body's sentinels sense

the presence of their natural enemy, the germ, and make their way toward it.

The phagocyte can combat the germs because it can change its shape. It projects part of its body in the direction in which it wants to go, and using this part as an anchor, it pulls the rest of itself along. The phagocyte destroys the germ by enveloping it; it folds itself about the microscopic organism and then proceeds to digest it. Sometimes, however, germs attack in such great numbers as to overcome the phagocytes.

The blood also has the property of producing substances called antitoxins. These diminish the toxic effect of the poisons that disease germs manufacture within the body. There are other substances, also, which the body manufactures as a defense against enemy organisms.

The success of the body's natural methods of defense against infectious disease is proved by the fact that man is victor in a majority of cases. The day of the single-handed struggle against disease has passed, at least in all civilized lands. Today man makes his stand against his disease enemies, not alone, but with the assistance that science brings to his aid. This includes antiseptics, antitoxins, vaccines, and serums.

Twentieth-century preventive medicine. Many ailments that until lately have been scourges to mankind are now wholly or partially controlled by scientific measures. Among these are smallpox, typhoid fever, diphtheria, meningitis, lockjaw, hydrophobia, malaria, yellow fever, plague, cholera, typhus, leprosy, hookworm, and tuberculosis. Some of these scourges of humanity have surrendered to the laboratory products of medical and bacteriological experts who count among their greatest victories the conquest of smallpox, diphtheria, typhoid fever, cholera, lockjaw and hydrophobia.

Sanitary science, in conjunction with medical science, has practically conquered malaria and yellow fever. Tuberculosis is yielding to a combination of the social, sanitary, and medical sciences; the death rate due to the disease has been halved since 1900.

Diabetes is the ailment last controlled by preventive medicine due to a recent discovery called *insulin*, which, while it does not cure, holds the disease indefinitely in check. Scarlet fever is being vigorously attacked with the new Douchez serum. Progress is also being made in the fight against measles and whooping cough.

Modern methods of preventive medicine are winning victories in the fight against nearly every form of communicable disease, that is, disease caused by germs. Unfortunately there are other diseases with which to cope besides those due to germs. The fight against germ diseases has been highly successful, but that against other types of disease has been tragically fruitless. Organic and degenerative diseases show no evidence of decreasing; in fact, cancer, apoplexy, and diseases of the heart and kidneys are all increasing. Apparently the time is rapidly approaching when man will have to begin fighting his own battles again as in the days of old. This time, however, the battle will be against himself rather than against germs. The need is plain; it is simply better habits of living, more regularity and greater frequency of medical examinations, and a keener appreciation of the old maxim, "A stitch in time saves nine."

Phases of public health. It requires more than white-gowned laboratory workers with test-tubes, incubating ovens, microscopes, and guinea pigs to control the health situation of a community. The undertaking demands the full coöperation of everyone, of the health official and of the private citizen. The factors which must be con-

trolled if a community is to enjoy reasonable immunity from disease are discussed in Chapter XXI, which deals with public health programs.

Personal hygiene. It has never been possible to enact legislation that will protect the individual from himself. Nor can he usually be protected from others who are mildly ill or who are carriers of disease germs. Yet, in both cases, the circumstances are capable of causing illness to the individual. The health of any individual is largely determined by his habits of health. Bad health habits cause vitality to be decreased and expose one to infections transmitted from others.

Legislation cannot cause a person to wash his hands before eating; it cannot prevent him from greeting a friend with a hearty handshake at the time when one or the other is suffering from a common cold. It cannot prevent him from doing any one of the many things which are quite correct according to custom, but all wrong according to the code of good health manners.

The weak point in the public health program of today is the inability to control the person who either does not know or does not care. Legislation cannot affect such people. Sentiment, however, may do so. One part of the teacher's work as a health educator is to foster this sentiment whenever there is opportunity to do so.

SOME SUGGESTED METHODS

An effective device for teaching health is that described on page 69. It illustrates how disease germs are transmitted from one person to others by the act of coughing or sneezing.

Before using this device, prepare the class for the demonstration by discussing ways in which germs travel from one person to another. Emphasize the point that

a person who is so ill mannered as to sneeze or cough, or even to talk forcibly, near another's face, violates not only a rule of good manners but also a rule of health. During this demonstration the teacher should teach the proper use of the handkerchief, and she should explain that one should turn one's head to cough or sneeze.



Figure 20. Germ Dangers

The device, pictured in Figure 20, consists of a sheet of fairly thin paper made more practical for the purpose by being enclosed by a frame cut from a sheet of stiff cardboard. The opening of the frame should be about one inch smaller each way than the sheet of paper; this allows a margin on the sheet for pasting it to the frame. Two facing profiles should be outlined on the sheet of paper, one in the act of sneezing or coughing.

By holding a small horseshoe magnet below or behind the sheet, and moving it about in a spiral motion, a small tack or other small piece of metal, representing a germ, may be made to move from the mouth or nose of the profile represented as sneezing, across to the face of the other profile.

The passage of the apparently unsupported metal bit that represents the germ tends to bewilder pupils for the moment and well illustrates the way in which actual germs are transmitted on droplets of saliva and other excretions that fly through the air.

Blackboard Work

In explaining how the hand spreads disease, discuss different methods of greeting; for example, the salute and the handshake. Children are usually interested to learn that at one time, according to tradition, men extended the right hand to show that it bore no concealed weapon. Explain the importance of the hand in the development of the race. Make clear that through neglect of a fundamental law of hygiene, cleanliness, the hand is at times one of man's worst enemies. By means of the hand germs most often enter the body.

The above ideas can be brought out well by drawing an outline of a hand on the blackboard, printing the word FRIEND upon it, and showing that such a hand is changed into that of a FIEND if it bears secretions of the nose or mouth, especially when its owner is ill. The ill effects of nasal secretions borne by the hand can be well brought out by converting the word FRIEND into the word FIEND merely by erasing the letter R.

When making such demonstrations as that described above, the teacher must not be too zealous and so develop a senseless dread of germs (bacteriophobia) in

the minds of her pupils. We need always to be quite sane in any discussion of germs. We have to live with our fellows, touch many objects they touch, and usually eat food handled by them; consequently no groundless fear of germs should ever be permitted either to originate or to develop.

We should always try to do our part to prevent the spread of germs, especially when we are ill. We should try to believe that others will do likewise, and we should have a reasonable amount of faith in them unless there are reasons for not doing so. Few health procedures are altogether safe. Whenever we begin trying to be 100 per cent perfect in health matters, there is danger of developing notions about disease which may finally affect us as unfavorably as would the disease itself.

A Project: The "Hand" Book of Health

Making a *Hand Book of Health* is an interesting and instructive individual project. It is a valuable method of getting health topics to the attention of parents.

Have each pupil use his hand as a model for outlining several leaves of notebook paper that are later to be cut out and bound together. The following are suitable topics for the respective sheets: The Glad Hand, The Helping Hand, The Handy Hand, The Skilled Hand, The Honest Hand, The Clean Hand, etc. The pupil should illustrate each page according to his own ideas. Quotations and original maxims may be used; clippings and pictures from newspapers and magazines make the book more interesting.

The cover page of the *Hand Book*—the glove, as one may say—should be cut out of colored paper and appropriately decorated. It may be ornamented with tiny hands cut from paper of various colors and arranged in

some sort of design. The following verse from one of Longfellow's poems is suitable for use as a motto:

Beautiful hands are those that do
Work that is honest and brave and true
Moment by moment the whole day through.

A Health Club

An effective way to make health instruction function in a practical manner is to organize a health club. The health club idea has been developed in many cities with encouraging results. Pupils like to "belong" to an organization; to have official duties, especially to have positions of authority; to hold meetings, as do their elders; to compete with others and to receive recognition for achievements.

When organizing a class into a health club it is well to explain to pupils why people organize into groups having similar interests. Suitable examples of such organization are Indian tribes, armies of Crusaders, settlements of the early American colonists, and the formulation of the Constitution of the United States.

Children will enjoy the plan of being original signers of the school's declaration of independence of King Disease. Have pupils draw up such a declaration and include in it a statement of local conditions that menace the health and safety of the community. The pupils should sign their names as parties to the declaration of health and safety principles which they are going to uphold. When this document is completed it may be framed in some manner and hung conspicuously on the classroom wall.

Proposed aims of the organization should include the abatement of conditions that are peculiarly local. In some schools the aim should be keeping the bedroom

windows open during hours of sleep; in others, keeping the nails clean and well manicured; in others, providing individual towels.

No matter how fine the aims of a health club may be, they will fail of achievement if they are unreasonable in their demands. If we expect to make good health a part of our national wealth, we must use common sense in achieving it.

The following suggested plan for organizing a health club is taken from *Teaching Health: Health Education Bulletin No. 4*, published by the Bureau of Education, Department of the Interior, Washington, D. C.

A. The association and its purpose. The Hunterdon County Health Association comprises all the Hunterdon county health clubs in the rural schools. Its purpose is to make Hunterdon county boys and girls *healthy, clean, happy citizens*. (This meaning of the club initials, H. C. H. C., may be a secret known to club members only.)

B. The Hunterdon county health club. The pupils of each school shall organize their own health club. Each room shall elect at least once a month its own health officers. The officers may appoint assistants to help them with their work. The chief health adviser is the teacher.

C. The duties of the pupil health officers:

1. To keep the schoolroom well aired.
2. To assist in keeping room and school ground clean, but not to conflict with the work of a paid janitor.
3. To keep outbuildings clean.
4. To assist with games on playground.
5. To assist in making the daily health inspection.

D. Method of making daily inspection.

1. The chief pupil officer takes the chair and asks the daily inspection questions. Each pupil scores one point for himself and school when he answers "yes" to a question. The club

secretary keeps a daily record of points scored by the room. The teacher is judge of all doubtful cases.

2. If a pupil is absent he does not score.

3. At the end of the month the total number of points made by the room is to be divided by the number on roll. This will give the average number of points for the room. A percentage can be found by dividing the average number by the greatest possible number that could be made by a pupil during the month.

4. At the close of the month any school having 75 per cent or over wins a County Association certificate. The school having the highest percentage wins the highest honor of the county association, a red and white H. C. H. C. banner.

E. The daily inspection.

1. Did you sleep with your windows open last night?

2. Did you brush your teeth last night and this morning?

3. Did you wash your face, hands, neck, and ears before coming to school?

4. Are your finger nails clean? (If a pupil bites his nails he does not score until the habit is broken.)

5. Did you do without tea and coffee yesterday?

6. Did you play at least one game yesterday?

7. Did you practice at least three physical training exercises yesterday?

8. Did you try to sit, stand, and walk correctly yesterday?

9. Did you keep your desk and surroundings in good order yesterday?

10. Did you do at least one helpful deed yesterday?

F. The weekly inspection.

On Monday ten extra points may be given as follows:

1. Did you take a bath last week?

2. Did you use your own towel and drinking cup every day last week?

G. At the close of the month 5 per cent may be added to the school's record if the Health Club officers and their assistants have faithfully performed their duties.

H. The club colors are red and white. The club pin is white with the letters H. C. in red.

The Health Circus

In this game groups of players do circus stunts. Each group (of five or ten players) is assigned to a base. (See below.) One extra pupil is ringmaster.

At the ringmaster's command, given to the groups in any order, the members of each group do their stunt. At the conclusion of any stunt the ringmaster says, "And the spectators clapped!" Thereupon the groups change places, and during the change the ringmaster tries to secure a place in a group. The player who fails to join a group while the change is being made becomes ringmaster.

If the ringmaster wishes, he may substitute the word *cheered*, or *whistled*, or *laughed* for the word *clapped*. When he does so, the group members remain on base. Any member who moves off base when the wrong word is used by the ringmaster, must become ringmaster.

A class of forty-six children could play this game as five groups (of nine pupils each) and a ringmaster. Each of the five groups selects a base. Outdoors this may be a circle drawn on the ground. Indoors it may be a crayon circle on the gymnasium floor. A gymnasium mat, a piece of apparatus, or any arrangement of articles accommodating ten pupils may be used as a base.

The ringmaster assigns a circus stunt to each group. Group I may be The Health Habit Jugglers. The members imitate circus jugglers and keep several objects, each representing a health habit, in the air at once.

The pupils of Group II act as The Human Clocks, who tell time without the aid of watch, sundial, hourglass, or other device. Each pupil of this group first raises his arms above his head. With the right arm he describes a clockwise circle, and as the hand returns to position above the head it claps the left hand striking one hour.

The ringmaster asks this group to tell what time it is,

what time the circus closes, what time boys and girls should go to bed, or some other question having to do with time. The Human Clocks then perform in answer to his question.

Group III includes The Whirling Wonders. These pupils jump into the air as high as possible and make a complete whirling turn if they can do so. As the ringmaster calls, they repeat their stunt as many times as possible. The Whirling Wonders announce that their food is milkshakes and scrambled eggs, and that they sleep on merry-go-rounds. These facts account for their ability to whirl as they do.

It is a good plan to have the groups change bases while The Whirling Wonders are doing their act. Many children lose their balance while doing this stunt, and so are unable to start as quickly as others when the change is made. This little handicap adds an element of sport.

Group IV may consist of Tight-Rope Walkers. They walk the tight rope because they live on a balanced diet. These children should go through the movements of a tight-rope walker.

Pupils of Group V may act as Roman gladiators. They may build human pyramids or perform other feats of strength and skill.

The ringmaster should keep all players constantly on the alert for the cue that indicates a change of base. He may give the cue at any time, either at the conclusion of an act or during the act.

SUMMARY

No one can be made invulnerable to disease by means of a charm or talisman. All must observe the laws of health. Man gains strength to fight disease enemies by fighting back. Science can aid much, but the body itself

must finally carry on the battle even in cases of those diseases for which science has developed artificial methods of immunization.

The debit side of Life's ledger nowadays shows fewer and smaller entries because science now aids man in his conflicts with infectious micro-organisms. There is every reason to believe that during the years to come preventive medicine will still further reduce the price humanity has to pay to infectious diseases. As teachers of health our chief concern should be to see to it that man himself does not again bring the debit side of life's ledger into active use through his failure to observe the laws that make for health. Everybody must make an intelligent and determined effort to fit himself physically so that he will not fall victim to the degenerative diseases which are today rapidly assuming the importance held until a little while ago by the infectious diseases.

Some Questions for Consideration

1. What are the respective ratings in public health measures of the leading nations of the world?
2. What facts substantiate Huxley's statement that "the birth of science was the death of superstition"?
3. What are some of the ways in which medical science has come to the aid of Nature in the battle between men and infectious diseases?
4. Discuss the role of the common house fly in the spread of disease—yesterday, today, and tomorrow.

References for Further Reading

- De Kruif, Paul H., *Microbe Hunters*. (Harcourt, Brace and Company.)
Lee, R. I., *Health and Disease*. (Little, Brown and Company.)
McFarland, J., *Fighting Foes Too Small to See*. (F. A. Davis Company.)
Literature of the National Health Council, 370 Seventh Avenue, New York City.
Control of Communicable Diseases: Report of the American Public Health Association Committee on Standard Regulations. United States Public Health Service, Washington, D. C. (Public Health Report, Dec. 17, 1926.)

CHAPTER VI

THE KEYSTONE OF HEALTH

Health examinations. The health examination is the true keystone of health. No personal hygiene program is complete without it. One active and powerful agency that places the importance of such examinations before our citizens is the National Health Council of New York City, one of the most representative health organizations in America. Its motto is, "Have a health examination on your birthday." And this suggestion is everywhere heartily endorsed and actively supported by the city and state health organizations, by other national health organizations, and by members of the medical profession.

The health examination, together with the follow-up that ought always to attend it, is today one of the most promising of all modern hygiene movements. Important business enterprises have found this to be true, even in terms of dollars and cents. So great an institution as the Metropolitan Life Insurance Company finds it profitable to provide its own policyholders with facilities for a periodical health examination. Hundreds of industrial enterprises give their employees such examinations gratis. Schools, likewise, have found that the modern health examination is strikingly superior to the old-fashioned medical inspection program. Since there is so much proof of the value of this provision where human health and welfare are concerned, that should be sufficient reason for including the periodical health examination as part of the individual health program.

Why have a health examination? The health examination reveals the patient's strength as well as his weak-

ness. It is a *fact-finding* process and not merely a matter of *fault finding*. Its emphasis is upon health and not upon disease. The prevention of illness and disease, the correction of defects, and the conservation of life are its three main objectives.

The health examination discloses important secrets. It forewarns of impending ill health, sometimes of disaster. It reveals to the examiner the patient's health assets and his physical liabilities. It tells at what cost the individual practices habits of self-indulgence, intemperance, over-activity, emotional strain, and other forms of intensive living.

For three reasons it pays, financially as well as physically, to have a health examination at frequent intervals and by competent examiners. Any one of the reasons is of itself sufficiently important to justify the time and expense involved. To many, the most appealing reason for a health examination lies in the fact that it increases one's chances for a longer life. A second reason for a health examination by a competent physician is that it sets one's mind at rest and dispels worry. Often, indeed, an examiner finds that the symptoms of which a patient complains are imaginary rather than real. Nothing stimulates one so much as to learn that one is in good health and is able to lead a reasonably active life. A third reason for a health examination is that it is the only way to discover physical and mental ailments in their incipency. And that is the very time when they most readily respond to medical measures.

When shall one be examined? The present is always the best time for a health examination. Those who have had a health examination within the year, or within the past two years, need not feel that a second examination is at once necessary unless a marked gain or loss of

weight, rheumatic pains, visual or auditory disorders, or other conditions that do not respond to simple treatment seem to call for it. To be sure there are a number of conditions that should indicate the need of a health examination more frequently than once a year. For the person who seems to be in good health, however, one annual examination is sufficient.

As a general rule, there is most need of periodic health examinations in the early and later years of life; that is, before the age of five and after the age of sixty-five. From the point of view of health, the best period of life is that between the ages of twenty-five and forty-five. An examination later in life sometimes reveals conditions beyond the reach of either care or treatment.

The fact that a majority of the people who are convinced of the need of a health examination nevertheless are content to undergo such an investigation only about once every five years indicates that, as yet, the importance of this measure as a safeguard of national security is not fully appreciated. For national security is truly built upon the health of the individuals who compose the nation. Individual health concerns not only the individual; it concerns the nation as well. When people finally learn that a health examination cannot be taken once for all, and that, to be at all effective for promoting the welfare of the individual, it must be taken at least once every year, then the individual life-span in this country will lengthen and the average length of life will be extended as well.

The nature of a health examination. It usually requires an hour or more to take a history and make a health examination that is of real value. Physicians often, and properly so, devote less time than this to their patients, but such an examination is commonly of a medical nature

and the emphasis is upon remedial measures. Treating the sick is one thing, safeguarding the health is quite another. No one should be so foolish however, as to judge the value of the examination by the time it takes. Obviously, the time required for an examination will be less if the examiner is well trained for his work, and if the person being examined is in a fair state of health. Usually, however, a good test of the value of an examination is the amount of time required for giving it, the thoroughness with which it is given, and the extent of the laboratory work that forms a part of it.

The American Medical Association has standardized the requirements of the health examination, and physicians are daily availing themselves of the suggestions in giving health tests. The Association's examination is very thorough. When used by a competent examiner, it shows exactly the state of health of the person examined. The Life Extension Institute of New York City also gives a thorough examination which includes all necessary laboratory tests. Life insurance companies are giving their clients the opportunity to receive excellent health examinations either free of cost or at reduced rates.

Unfortunately, many people who require the services of a physician, not only to make a health examination but even to render medical aid, shop about in search of a bargain. And such people usually find a bargain, poor as it may be, for at no time in history has competition for the patronage of those who need medical service been so keen as it is at present. But bargains of this sort need always to be scrutinized closely, as other bargains must be. It is one responsibility of the teacher to caution on the part of the one who has been examined, consideration in selecting medical advice or treatment.

What follows the health examination? To be of any

value, a health examination must be followed by an *explanation* on the part of the physician, and *determination* on the part of the one who has been examined. Following the examination and a study of its findings, the advice that the physician gives to his patient is exceedingly important. It has a direct bearing upon the future health of the patient. It forewarns of disease, breakdowns, and reduced efficiency, and it forestalls their development. It individualizes the laws of hygiene.

If the examiner understands his patient's condition, and if he knows the application of general laws of hygiene to special conditions, he can in a short time teach more hygiene than his patient will learn unaided in a lifetime. As in other subjects, group instruction cannot equal individual instruction in health matters. The examiner gives his patient what may be called a private lesson in health. The inexperienced or poorly trained health adviser cannot, of course, do that at all. Emphasis cannot be placed too strongly upon the great importance of selecting an examiner who is a licensed physician—experienced, reputable, and professional.

The usefulness of the examiner's advice depends upon the determination with which his directions are carried out. Health defects cannot be repaired over night. Months of painstaking effort may be required to regain health that has been lost through disease or faulty living habits. The patient's most important contribution to bringing about his own physical rehabilitation is his spirit of determination. Unless it is present as a third factor in one's personal health program, the other two, examination and explanation, are of but little value. One must persistently exert an effort to regain health, whenever one has lost one's grasp of it. The mind must aid one to recover health and the patient must follow directions.

The pupil's health examination. The modern health examination is an outgrowth of the earlier medical inspection, the purpose of which was to discover conditions that endanger the health of the class. At the outset, the one idea of health work was to protect the health of the public. On that account, the emphasis in teaching was upon communicable diseases. Gradually, however, the people have come to realize the necessity for expanding the school health program, and today, instead of its being a negative program with disease prevention as its main purpose, the modern school health service is a positive program with health promotion its outstanding activity.

The pupil's health examination should be as thorough as conditions permit, because it is the framework upon which his individual health program is based. It is, in a way, a sort of working drawing of the pupil's physical condition. It shows the location of foundation supports, it indicates places where stronger structures need to be used, and it specifies the building material required.

A highly important phase of the pupil's health examination is concerned with the head. It includes a consideration of the special senses—especially the eyes and ears—the teeth, the tonsils, and the adenoids. Speech defects such as stammering must also be considered. Personality must not be overlooked, of course.

The extremities of the child, and also the trunk, must receive attention too. There is less likelihood of defects in those parts than of disabilities of the special senses. It is when examining persons of middle age that most careful attention must be given to an investigation of the trunk and its organs, for degenerative conditions of the heart, kidneys, and digestive apparatus characterize the middle period of life. The feet and legs of the aged are often the source of greatest trouble to them.

It must be understood, however, that any health examination which fails to include an investigation of the whole body is of little value, for, after all, disease follows no rule of thumb as to severity, location, or the age of the person to be attacked. The school child is as likely to have heart disorders as is the adult. The adult is quite as likely to have disordered vision as is the child.

The follow-up by nurse and teacher, working with parents and pupil, is undoubtedly of great importance. The modern health examination is educational as well as medical. The doctor's advice is less apt to be expressed in a series of "don'ts," than in a prescription of "do's." If the doctor finds a heart to be defective in some way, he is not likely to forbid all exercise, but rather to test out the exercise tolerance of the heart, and to base his judgment upon the real relation of exercise to the individual's cardiac condition. The examiner's judgment must not be focussed so closely upon the pathological that he fails to foresee the effect of restricted physical actions upon the child's mental reactions. A medical inspection should never result in causing a patient to become introspective.

The teacher's health examination. Except in cases of communicable disease, the pupil's health concerns other pupils little, if any. Its chief importance is personal. When, however, we come to consider the teacher's health, we find an entirely different situation. The teacher's health concerns the whole class. If she is not well, it makes no difference whether the condition is the result of disease, defects, or a disorder of some other sort, the entire class is likely to be affected unfavorably. Illness reacts upon the teacher's patience, discipline, enthusiasm, and teaching efficiency. "Nerves" may be as "catching" as any of the communicable diseases.

It is important, therefore, that teachers practice what they preach, especially so far as concerns the health examination. Teachers are quick to praise health wherever they see it; they should be equally enthusiastic about having a competent examiner investigate the state of their own health. Headaches, for example, may result from eye conditions; the suspected eye trouble may result from stomach disturbances; upon examination the stomach trouble may prove to be a heart condition; and the heart symptoms which trouble the patient may clear up under treatment of the nerves. Self-diagnosis is dangerous business. The wise teacher depends upon the doctor. Teachers must have health; the medical examination helps them to acquire it.

SOME SUGGESTED METHODS

Slogans

(In discussing the following slogans, have pupils underline the important words in each.)

Get ready for the next task, and do better.

Forget now—regret later.

Don't skip any "weigh" stations in life.

Delay leads to decay.

Disorders rarely follow those who follow orders.

Correct each defect.

Classroom Devices

1. **General Health's three commands.** This device may be used for presenting the topic "Health Examinations." Cut a strip of stiff paper about 6 inches x 24 inches in size, place it on the desk, and label the sections as shown in Figure 21. Next, turn the strip over from left to right, and label as shown in Figure 22. Turn the strip over once more, as shown by Figure 21, and fold B over C, A over D, and G over H. Then copy Figure

23. Turn F back and copy Figure 24. Turn H back and copy Figure 25. Fold G over H. The device is now ready for use.

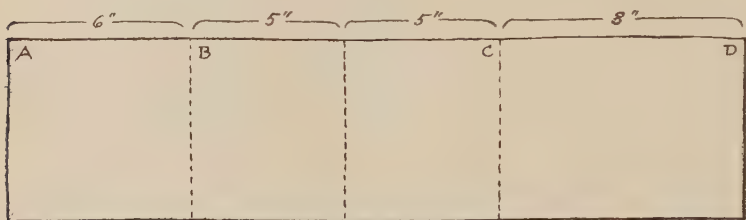


Fig. 21.

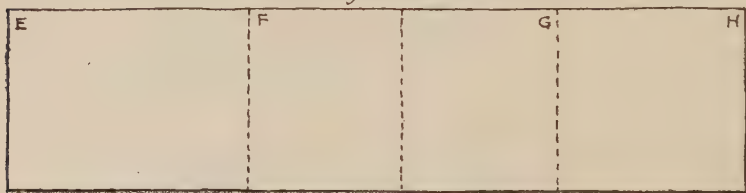


Fig. 22.



Fig. 23

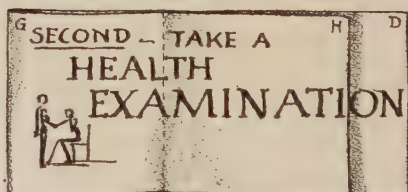


Fig. 24

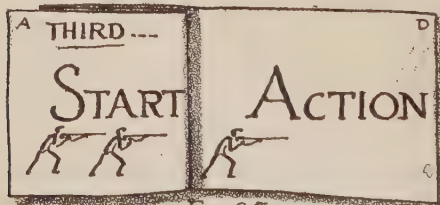


Fig. 25

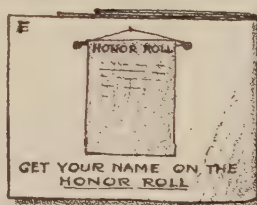


Fig. 26.

Figures 21-26. General Health's Three Commands

Discuss "Attention," the first command of General Health, and explain its meaning to soldiers in the battle against disease. Ask pupils for the second command

which General Health gives to his soldiers. Turn back F, and reveal the second command, "Health examination, all." Discuss this command and its importance. Soldiers examine their guns, bayonets, and other equipment before going into battle; health soldiers ought to examine their weapons and defenses with the same thoroughness before engaging the forces of ill-health. Discuss the health examination. Emphasize points of most interest to the class; for example, strength, height, sight, hearing, teeth, and such items. After asking the pupils to guess what General Health's third command to his soldiers is, turn back H, and so show the third order, "Begin action." Finally, turn D over to the left and so show section E with its honor roll. Announce that the names of all pupils who make praiseworthy effort to raise the standard of their health and to carry out the directions of the school health-examiner, nurse, or teacher, will be written on the honor roll at the close of the term.

2. **Dental hygiene booklets.** A booklet made in the shape of a saw (Figure 27) offers an interesting approach to the hygiene of the teeth and mouth. The first page of the booklet may be used to call attention to the care which a carpenter gives to his tools. He protects the teeth of the saw from rust and so keeps it in repair. Use this thought to lead up to a general consideration of human teeth.

The second page may be devoted to cleanliness. Water is bad for the teeth of a saw, but it is not bad for human teeth. Discuss here the effect of extremely hot and extremely cold water on the teeth.

Use the third page for a lesson on the care of the teeth. Explain that the teeth of a saw must be protected from injury by nails and hard knots, and that pupils must protect their teeth from possible injury by hard substances

such as nuts and candy. Nails are injurious to the teeth of a saw; finger nails are injurious to human teeth. In discussing the protection of the teeth, consider games likely to result in injury to the teeth. Playing catcher in a baseball game without wearing a mask often causes the loss of teeth.

Use the fourth page of the booklet to point out that the carpenter keeps his tools in good repair, well oiled,

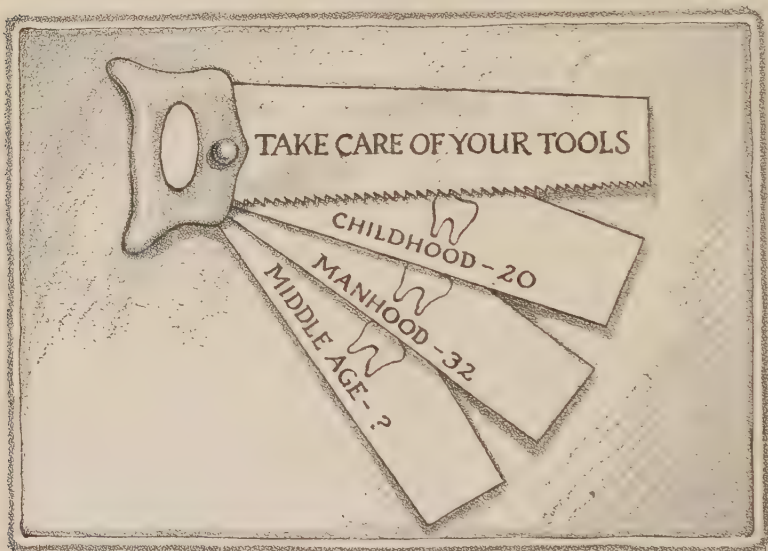


Figure 27. Keep Your Tools and Toolbox Clean

and clean. Make the point that the proper hygiene of the teeth includes dental care and the use of the toothbrush, tooth paste, dental floss, and alkaline mouth wash. Emphasize the thought that a good workman is known by his tools, and that a good workman knows his tools.

Dental hygiene may also be profitably taught by means of a booklet made in the shape of a tooth. Original illustrations may be drawn for its embellishment, or illustra-

tions may be cut from magazines. Illustrations make the pages both attractive and interesting. Such a booklet may be made by the teacher, then used as a model for the class to study. Pupils should make this booklet as a home assignment.



Figure 28. A Mannikin Chart

3. A mannikin chart. Prepare a chart like that shown in Figure 28. One of the paper flaps should be used for designating weight, the others, respectively, to designate eyes, ears, hair, mouth, spine, hands, and feet. Each paper flap should cover three similarly shaped pieces of paper numbered 1, 2, and 3, respectively.

By means of writing or drawing, the teacher should designate on each flap some unhealthful condition common to the part of the body that the flap indicates. The three ear conditions, for example, may be (1) wax in the ears, (2) running ears, and (3) defective hearing. Three eye conditions may be (1) infected eye (pink eye, for example), (2) defective vision, and (3) injury to the eyes. The flap that indicates the mouth may show (1) unclean teeth, (2) decayed teeth, and (3) diseased tonsils. Three common scalp conditions are (1) dirty scalp, (2) head lice (pediculosis), and (3) dandruff. Spine conditions worthy of discussion are (1) incorrect posture, (2) weakness of muscles, and (3) deformities (due to tuberculosis or accident). Three suitable topics pertaining to the hand are (1) cleanliness, (2) peeling skin, and (3) itch (scabies). Topics pertinent to a discussion of the foot are (1) misshapen arch, (2) deformities (especially those caused by ill-fitting shoes), and (3) proper methods of walking. The flap marked "weight" may be used for a discussion of (1) diet, (2) sleep, and (3) fresh air.

The chart may be used thus: A pupil is asked to make examination No. 1. He begins his examination by reading what he finds on each of the flaps marked No. 1, describing the condition, and suggesting suitable care or treatment. Another pupil may do the same with all flaps marked No. 2, and another with all those marked No. 3. From time to time the material on the flaps may be changed, of course.

The top of the mannikin chart may carry some appealing legend such as,

Look carefully and you will see
Just what it is that troubles me.

4. **Making a limerick book.** Since most children are interested in the clever verses called limericks, pupils will

usually be pleased to make and illustrate a book after the fashion shown by Figure 29. This may be made a useful device for presenting certain health facts.

The teacher may write the limericks. She should then read to the pupils all the lines of one limerick except the last, and she should discuss with them the lines that they suggest for use as the concluding verse. To choose the

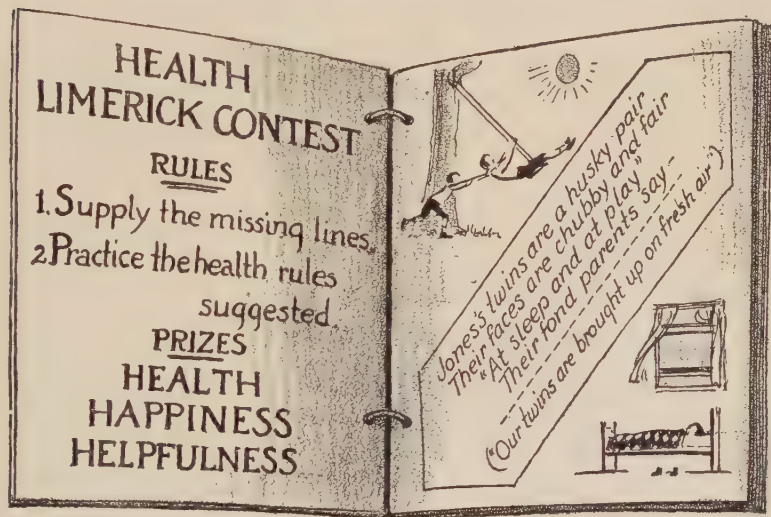


Figure 29. A Health Limerick Booklet

concluding line, pupils may vote on the best line suggested. Or the teacher may suggest a concluding line and give her reasons for doing so. Pupils often find much pleasure in making their own limericks for their books.

The following limerick is merely suggestive of what can be done in this work:

Jones's twins are a marvelous pair.
 Their faces are chubby and fair.
 At sleep and at play,
 Their fond parents say
 (*Our twins are brought up on fresh air.*)

A Home Assignment

A home assignment for English work is to have pupils write an imaginary telephone conversation between their present selves and themselves forty years from now. What conditions might the forty-year-old person have to report? (Illness, poor hearing, defective eyesight, shortness of breath, indigestion.) In the class discussion of these themes, the pupils may suggest what they may begin doing now to assure themselves, so far as possible, that forty years from now they will not have such matters to report.

SUMMARY

The health examination is one of the most valuable weapons available to preventive medicine for waging war against the diseases, disorders, and defects of the human body. If weaknesses exist, the health examination reveals them. It uncovers hidden sources of attack upon vitality. In the time of apparent physical security, it indicates whether or not there is valid cause for alarm. The health examination indicates the balance of physical welfare; it indicates whether there is a deficit of health possibility. It reveals to the individual whether or not he is budgeting his vital resources properly, and usually it shows him how he may invest attention to his health more advantageously.

The teacher plays an important part in stimulating interest and confidence in health examinations. She must encourage pupils and their parents to avail themselves of examination facilities afforded by modern school health service. She should be willing and eager to set an example for her pupils by taking an examination. Since fear, ignorance, and superstition often militate against the health examination, one duty of the teacher is to create

an attitude of confidence in the health examiner and the health examination. The teacher must at all times co-operate with health authorities and lend her enthusiasm, ability, and influence to the active support of the program of health conservation.

Questions for Further Consideration

1. In what way does the teacher's health affect that of her pupils? Explain your answer fully.

2. Compulsory education should never result in disease, disorders, or defects of any kind. Suggest ways of safeguarding the pupil's health.

3. Mention some of the dangers of introspection. Does the health examination increase morale or decrease it? Explain your answer fully.

4. What can we learn from the Chinese, who for centuries have been paying doctors to keep them well rather than to cure them when they are sick?

5. Dr. Haven Emerson, one of our leading sanitarians, is credited with having said, "The periodic health examination can be relied upon to have a greater influence in reducing sickness and death rates than all the power and expenditures of public and private health agencies combined." Discuss the above, pro and con.

6. Everyone owes it to his doctor and dentist, as well as to himself, to appear for examination promptly and as clean as possible. What suggestions along this line can the teacher give to the class? Why is it better to make the suggestions general rather than personal?

7. The person who gives false answers to the examining doctor is cheating—himself. What are some of the penalties that may follow cheating of this sort?

8. Where is the best place to get a reliable "tip" on the race against ill-health? What are some other but less reliable methods of getting "inside information"?

References for Further Reading

Cornell, W. S., *Health and Medical Inspection of School Children*. (F. A. Davis Company.)

Hoag, E. B., *The Health Index of Children*. (Whitaker and Ray-Wiggin Company.)

Wood, T. D. and Rowell, R. G., *Health Supervision and Medical Inspection of Schools*. (W. B. Saunders Company.)

What Every Teacher Should Know About the Physical Condition of Her Pupils. (Health Education Series No. 18.) Bureau of Education, Department of the Interior, Washington, D. C.

Health Essentials for Rural School Children. Published by the Joint Committee on Health Problems in Education, of the N. E. A. and the A. M. A. Dr. Thomas D. Wood, 525 West 120th St., New York City.

Literature of the Association for the Prevention and Relief of Heart Disease, 370 Seventh Avenue, New York City.

CHAPTER VII

THE HEALTH RAYS

Man's debt to the sun. The sun is man's most generous benefactor. Throughout the ages, since before life first appeared upon the earth, the sun has been flooding our globe with a mighty and unending stream of sunbeams. From a source more than ninety-three million miles distant, the sun's rays make their way through intervening space in the incredibly short time of eight minutes. They give light and heat to all the earth.

The food we eat, the water we drink, the clothes we wear, all are made possible by the sun. The medicines with which we win our way back to health, the energy we feel surging through our frames, the colors that brighten our hopes as well as our homes come from the sun. There could be no life on the earth but for the sun.

It is small wonder that the ancients worshipped the sun. True enough, they were unaware of many of the wonderful blessings their sun god showered upon them, but they well understood that the sun had a beneficent influence upon them and upon their crops. They knew they felt happier when their sun god beamed upon them.

Apollo was the sun god of the ancient Greeks. And since the sun not only gives life and energy, but also smites and annihilates at times, Apollo was also the god of pestilence. The burning rays of the sun were the god's arrows of destruction, which he sent from his dwelling place on Mount Olympus.

Throughout man's history we find proof of his debt to the sun. The more we learn of the laws that control the universe, the more do we come to regard the sun as the

greatest aid in man's struggle for existence. Today, man realizes as never before the great health-giving and life-giving power of sunshine.

Sunshine for healing. Heliotherapy means *sun treatment*. The Swiss physician, Rollier, was one of the first doctors to treat patients suffering with tuberculosis of the bones and joints, by systematically exposing their bodies to the direct rays of the sun. Rollier's results were so convincing that other physicians soon took up the method he had devised. Today there are sanatoria in many countries where heliotherapy is being used with astonishing results. It is hoped that the sunlight treatment may prove equally effective in curing tuberculous glands.

A course of Rollier's treatments requires considerable time. The exposure of the body to the direct rays of the sun is undertaken only gradually. The feet are first exposed, and for only about five minutes. On succeeding days the feet are again exposed, together with an additional amount of body surface. Finally the entire body may be exposed for as much as several hours a day.

Sunlight treatment is not limited to treating tuberculosis of the joints and bones. It is proving very successful in treating rickets, a disease characterized by various bone deformities, among them bow legs, a square-shaped head, and bending of the ribs. Rickets is more prevalent during winter, the time of least sunshine. It also occurs most frequently in crowded cities where children have little opportunity to be in the sunshine, and in homes where little sunshine enters. Somehow the sunshine affects the chemistry of the blood favorably. It cures as well as prevents rickets if employed in time and for a considerable period. Even the sun cannot work its wonders in a single day.

Sunshine promotes growth. Numerous experiments

show that the rays of the sun favorably influence the growth of animals as well as of plants. No chapter of medicine is more interesting than that which gives an account of the relation of the sun to man's health, growth, energy, and general well-being.

Secret of the sun's health powers. As is well known, a sunbeam is composed of a number of different rays of light, ranging in color from red through orange, yellow, green, blue, indigo, and violet to ultra-violet. Not all of these are health rays; some are light and heat rays, and all of those pass through ordinary window glass.

The health rays are the ultra-violet rays; they do not pass through window glass. Scientists have known of the ultra-violet rays for several years; they have made use of them in photography, and in that work they have called them actinic rays. The role of the ultra-violet rays in promoting growth and in improving the health of human beings and of animals is a recent discovery. Heretofore, because plants thrive under glass, and because the sunshine that enters our homes through the windows is found to be warm and comfortable, it was believed that the influence of sunshine was always the same whether or not it passed through intervening glass. Today we know that the window glass which keeps out rain and cold is just as effective in keeping out the ultra-violet health rays of the sun. It is just as necessary to open windows to let in health rays as it is to let in fresh air.

Scientists have recently invented a new kind of glass that admits the health rays. It is not yet in general use, however, except in hospitals, sanatoria, and schools for undernourished children. Those who live much indoors should remember to raise the windows as well as the shades whenever they want to let in the sunshine and its life-giving health rays.

Artificial sunshine. Having discovered that the health value of sunbeams comes from the ultra-violet rays, scientists found and demonstrated that the ordinary carbon arc light and the mercury vapor lamp will also supply the body with health rays of the sort that are found in sunshine. Doctors now use artificial sunshine for treating tuberculous bones and joints, rickets, and certain skin diseases. Results are encouraging.

Scientists have even learned how to irradiate foods with artificial sunshine. Ultra-violet health rays may now be taken internally as well as externally. The health-producing value of cod-liver oil, for example, undoubtedly lies in the content of actinic rays (ultra-violet health rays) which the liver of the cod was in some manner able to produce for the health needs of the living fish. Great possibilities seem to reside in this recent discovery. With irradiated foods, artificial sunshine, and glass that admits the sun's health rays, new fields of preventive medicine seem to lie before us.

Trapping the sunbeam. By means of its plant life, Nature manages to trap much sunshine that would otherwise be wasted. Chlorophyll, the green coloring matter in leaves of soil-grown plants, can in some manner unknown to science manufacture starches, sugars, and cellulose. The plant uses these substances for food. Plants then in turn serve as food for man, either directly or indirectly, and so provide much of the fuel that the body's cells use for producing body heat.

Plants that lived thousands of years ago have been trapped by the process of fossilization. When burned as coal, these give out to man the warmth with which sunbeams bathed vegetation ages ago. Thus, in these ways as well as in others, sunshine constantly serves humanity with health, warmth, light, and energy.

Sunshine as a germ-killer. It is common knowledge that direct sunlight is destructive to most infectious micro-organisms. The effect is by no means instantaneous, but nevertheless sunlight does have a decided germicidal power. Sunlight is the supreme disinfectant.

Hot water and soap, fresh air and sunshine effectively sterilize rooms occupied by patients sick from infectious organisms, for example, with tuberculosis. Sputum of a tuberculous patient is far less likely to be infectious outdoors than indoors, because outdoors it is exposed to the sunlight. Often, however, the mucus contained in sputum serves as a protective agent against the sun's rays. Tuberculous sputum carried indoors on the clothing may, if conditions are right, result in infection.

Sunshine is a valuable ally in the fight against disease germs, but we must not rely solely upon the sun's rays. We must take every reasonable precaution to make sure that as few germs as possible are scattered about in places where people live, either outdoors or indoors. We must make sure that the excretions of the sick are disinfected by chemical agents or destroyed by heat. We must make sure that proper hygienic and sanitary measures are taken to reduce to a minimum the opportunity for infectious organisms to find their way into the healthy body.

The X-ray and other rays. The science of healing uses other rays, besides the sun's health rays, which should be mentioned here. In medicine and surgery the X-ray does good service. Fractures and dislocations are diagnosed and treated, not blindly as in earlier times, but with full knowledge of the conditions as revealed by the X-ray plate or by the fluoroscope. The X-ray is now used in fitting shoes; the purchaser sees his foot in place in the shoe, and notes whether or not there is room enough for

it. By means of the X-ray the lungs and other organs of the body can be carefully studied and their condition thoroughly diagnosed. Various skin ailments, including ulcerated skin, respond encouragingly to its use.

The powerful rays emitted by radium are also proving a valuable aid to medicine. These rays are called *gamma rays*. They are a sort of super X-ray, being more powerful in their penetration than the ordinary X-ray.

A recent scientific development is the *cathode ray* which is projected from a tube that resembles an X-ray tube. Cathode rays have been known for some time, but only recently has it been possible to produce them of sufficient strength for useful service. Even now it is a question just how these rays can best be used to advance science. They kill bacteria, insects, and other low forms of life if used in sufficient strength. It seems likely that they will be used somewhat as the X-rays and gamma rays are used.

Fresh air and sunshine. The sun shines brightest in fresh air. The improvement in health that so often results from life in the open is largely due to the greater amount of health rays the body receives. Altitude, so long associated with health cures, is important not only because of the better air the patient receives but also because clear air lets through more of the health rays.

Smoke, dust, clouds, fogs, and mist serve as screens which hold back part of the health rays. Nowadays, more than ever before, health authorities in cities are giving attention to the contamination of the air by smoke and dust, not only because the lungs need purer air, but because dust-laden air keeps back part of the sunshine that would otherwise help in solving some of the health problems of the city dweller.

The physical value of fresh air. Some twenty or

thirty years ago the chemical theory of ventilation was accepted. We ventilated because the lungs need oxygen, and we wanted to remove the poisonous carbon dioxide that the lungs exhale. The tragedy of the Black Hole of Calcutta has long been cited as an example of man's need for oxygen and of the poisonous effects of exhaled air. Today scientists believe otherwise, and the public, too, is rapidly learning about the new theory of ventilation. The New York State Commission on Ventilation based its reports upon this theory, and are most convincing.

Briefly, the new theory of ventilation is that the individual needs fresh air to reduce his body temperature rather than to oxygenate his blood. In the words of Professor F. S. Lee, of Columbia University, "the problem of ventilation is physical, not chemical; cutaneous, not respiratory." Comfort, physical and mental efficiency, and energy depend a great deal upon whether or not the body is able to regulate its internal temperature. If the surrounding air is lower in temperature, but not too low, all is well; on the contrary, if the surrounding air is higher in temperature, physical discomfort results unless there is a current of air, and if the air is not at its saturation point for moisture. The body temperature must be kept at 98.6°Fahrenheit. If the body cannot eliminate the excess heat produced, discomfort ensues. Supplying the body with oxygen will not remedy the condition; neither will the removal of carbon dioxide. There must be opportunity to eliminate body heat through perspiration. If the surrounding air is over-heated, sluggish in circulation, and filled with moisture, the heat-regulating mechanism of the body is disturbed. There is then a possibility that death will ensue unless needed relief is promptly given. The victims of the Black Hole of Calcutta died because the heat-regulating mechanisms

of their bodies failed to cope with over-heated, stagnant, moisture-laden air. They did not die from lack of oxygen or from excess of carbon dioxide.

Solution of the fresh-air problem. The fresh-air problem of present-day civilization is to bring in outdoor air without changing it in any important particular. Rooms should be so well ventilated that the air we breathe, and in which we live, is clean. Especially must it be clean so far as concerns freedom from irritating dust and disease-producing microorganisms. It must be free from unpleasant odors and irritating or poisonous gases and fumes. It must be moist; it must contain approximately the amount of water vapor that outdoor air contains. It must circulate without producing uncomfortable currents. According to the recommendation of ventilation experts, it should fluctuate in temperature a degree or so, in order to stimulate the body.

All these essential requirements are not easily met because human beings differ greatly in their ideas of what constitutes ventilation. Some like air warmer than that preferred by others; some consider a slight current of air as a dangerous draft. Habit and age, as well as the amount of clothing worn, combine to complicate the ventilation problem. Probably the best solution of the problem is to assume that no one has to have a 100 per cent fresh air environment twenty-four hours a day. The human body is usually quite able to make adjustments necessary to an unfavorable atmospheric environment, provided the adjustment is not too great nor for too long a time. We can all stand poor air for a limited time, and probably without injury to the body, even though we may be uncomfortable while doing so.

Most adults can control the ventilation of the sleeping room without subjecting others to discomfort. Here,

then, is opportunity to give the body eight or more hours of favorable ventilation environment—cool, circulating, outdoor air. Totalled, the hours of sleep provide fresh air during at least one third of life. That is no bad beginning, provided the rest of the individual's life is lived under not too unfavorable conditions.

Almost everyone gets a regular opportunity, a daily opportunity, in fact, to get outdoors for an hour or more and to subject his body to the tonic effect of fresh air. On such occasions we can add to our opportunities for getting fresh air without inconveniencing others whose ventilation needs differ from our own.

Better ventilation. In the home, the classroom, and the office, we must consider the ventilation requirements of others even though the air of such places may be at times unpleasant. When possible, the windows of such places should nevertheless be opened from time to time, if only for a short period, and the room freshened with outdoor air. This can be done in classrooms at recess time, during marching periods and physical education classes, and at the noon hour. In the home, rooms can be aired while they are unoccupied. In the office, except in severe weather, windows may be opened wide enough at top and bottom to admit outdoor air and so give outlet to warm air.

The window board is a simple contrivance that permits outdoor air to enter below the raised lower window sash without danger of draft. It also deflects the incoming air current upward. The New York State Commission on Ventilation recommends the slanting window board with radiation under the window to give the incoming air sufficient warmth to make it comfortable without taking away its freshness. That body of experts also recommends a gravity exhaust duct having an opening

near the ceiling. This plan has been tested out in a number of New York schools. In those it gave good results and brought about a reduction in the number of cases of respiratory disease.

At present there is a growth of public opinion eager to support a program of better ventilation. This fact seems to insure a constant improvement of indoor living conditions that within reasonable limits will meet the health needs of indoor workers. The ordinary office, living room, and classroom can be sufficiently ventilated by means of the window system described above. Mechanical methods of ventilation will continue to be needed for ventilating public auditoriums.

SOME SUGGESTED METHODS

Healthgrams

These should be written on the blackboard with blanks for the missing words as here. Pupils should be asked to fill in the blanks. The correct words are shown in parentheses.

Don't shun the s. (*sun*)

Fresh air—first, last, and a. (*always*)

Bad a. . . . is bad business. (*air*)

Get a move on, Doctor F. A., you're needed.
(*Fresh Air*)

Are you open-minded on the o. w. business?
(*open window*)

Be a winner in the h. game. (*health*)

Classroom Device

Health flowers. A window box of health flowers provides an excellent approach to either a general lesson on health or a lesson on the special topic of sunshine. If the classroom has a window box, the teacher can easily transfer the pupils' interest from that to the lesson in hygiene.

Even though there are no window boxes in the classroom, many pupils will be familiar with them because they have them at home.

Preparatory to the lesson, the teacher should make a poster window box like that shown in Figure 30. Pupils

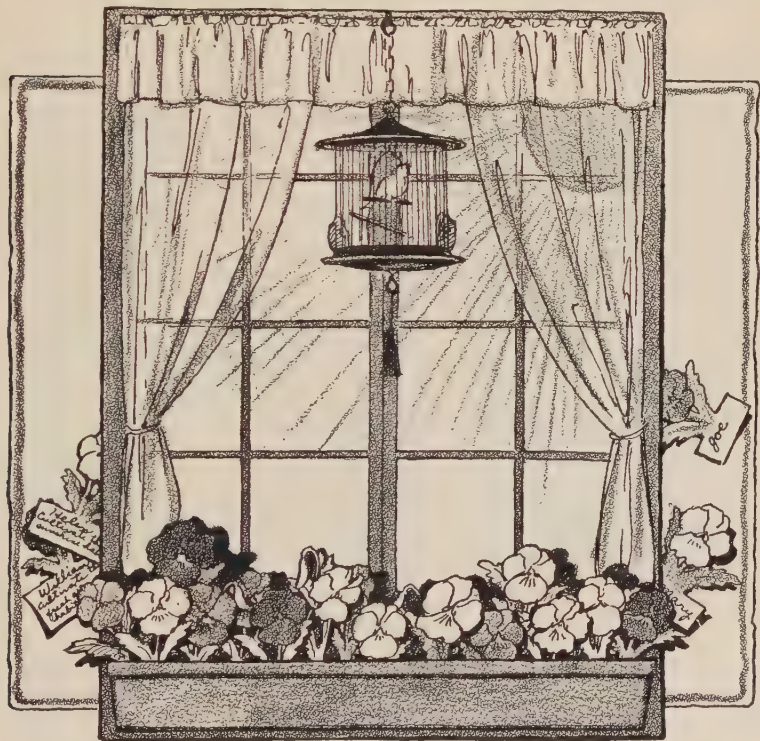


Figure 30. Health Flowers

should then be asked to make flowers for the box and to color them appropriately. Each pupil should make one flower and write his name on it. Flowers may be outlined on stiff paper, colored, and then cut out.

When the pupils have completed their flowers, the teacher should collect them. Before the following lesson

begins she should select several of the best flowers and write a health habit on the base of each. These health habits may include the following and others: Cultivate the fresh-air habit; cultivate the sunshine habit. She should then arrange the flowers in the poster window box.

When the class next meets, the window box should be in place. A pupil may then be asked to "pick" one of the health flowers, that is, to draw it out of the window box. The chooser of the flower should read the name of its maker and also the health habit or health message written on it. He should then discuss the health message, and the other pupils should take part in the discussion.

During the discussions the teacher should see to it that the following points are made: (1) Plants need sunshine, air, water, soil, and room in which to grow. The human plant needs sunshine, air, water, food, and care. Without care human plants may become weeds instead of flowers. (2) Flowers and other plants turn towards the sun. Too, they try as best they can to repay their debt to Nature and to please man. Human plants should do these same things.

Blackboard Work

1. **Three kinds of air.** Place three large O's on the blackboard, as shown by Figure 31. Then recall to the pupils the Mother Goose rhyme.

Pease porridge hot,
Pease porridge cold,
Pease porridge in the pot
Nine days old.

Some like it hot,
Some like it cold,
Some like it in the pot
Nine days old.

Explain that many people are like this with regard to their fresh air preferences; some like it hot, some like it cold, some seem to like it in the room nine days old.

Each of the three O's on the blackboard form part of one of the words, *hot*, *cold*, and *old*. Make the point, also, that the O's stand for oxygen, the vital principle of fresh air.



Figure 31. The Magic of Fresh Air

2. **Carbon monoxide gas.** The danger from carbon monoxide gas poisoning in any closed garage where a motor is running can be taught by printing the word **CLOSED** on the blackboard, and underlining the *C* and the *O*. These letters—CO—are the chemist's symbol for carbon monoxide.

Print the word **OPEN** on the blackboard and underline the *O*. Explain that there is no danger from carbon monoxide gas in the open garage, and tell why. The teacher ought to emphasize as strongly as possible the

need for exercising great caution and for always making sure the garage is well ventilated if a motor runs indoors.

3. **Obstacles that hinder health rays.** See the diagram (Figure 32) that explains how window glass obstructs the health rays and so deprives the body of that power in sunshine which produces satisfactory health and growth.



Figure 32. Take Your "Sun Bath" in the Open

Clouds, smoke and dust also obstruct the passage of health rays.

A Class Demonstration: The Lamp of Life

The teacher may use three candles to illustrate the following passage from the writings of Oliver Wendell Holmes:

"There are three wicks, you know, to the lamp of man's life: Brain, blood, and breath. Press the brain a little, its

light goes out, followed by both the others. Stop the heart a minute, and out goes all three of the wicks. Choke the air out of the lungs and presently the fluid ceases to supply the other centers of flame, and all is soon stagnation, cold and darkness."

The teacher should light the candle that represents the brain. Show that the flame most quickly ignites matches when it is steady. Hold a match near the flame while it is being fanned and note how difficult it is to get the candle flame to light the match. The lesson to be drawn from this is that the brain must work steadily. It cannot work just now and then if it is to accomplish results that are worth while.

Hold the candle in any position whatsoever. Note that the flame always reaches upward. Call attention to the fact that the brain (mind) must always be trying to reach upward to the higher and better things of life. Even when matters go wrong, the will (mind) should make a constant effort to reach upward, just as the candle flame points upward regardless of the position of the candle.

Light a second candle from the flame of the first. Explain that the brain (mind) can give information, guidance, and help to others without losing any of its power, just as the candle that gives light to another candle, itself loses no part of its own flame. Make clear that happiness is something like this; it takes nothing from the giver and, what is more, it even adds to his happiness.

Smile.

And when you smile,
Another smiles,
And soon there's miles
And miles of smiles,
And life's worth while
Because you smile.

Light the candle that represents the heart. The wax

that hardens as it cools may be used to point a lesson on the coagulation of the blood. Oil (melted wax) flows best in a candle wick that is soft; hard wicks do not easily light. Make the point that soft arteries are better for life's purposes than hard arteries. Teach the following quotation from Amiel: "The mainspring of life is the heart."

Light the candle that represents the breath. Invert a glass over the flame and note that the flame at once flickers and soon goes out. Explain that the body must have oxygen to support life just as the candle must have oxygen if it is to flame. Teach this quotation from Rousseau: "To live is not merely to breathe; it is to act."

Home Assignment

A school newspaper. Briefly discuss the making of a newspaper. Tell something about the making of paper from wood pulp; about the preparation of news items and illustrations; about the classification of news and the writing of editorials. Bring a newspaper into the classroom and use it to bring out points of your discussion.

Ask pupils to prepare a class newspaper. A good name for it is "The Rain or Shine Weekly." Assign duties to the various pupils. Let some be writers of features, others of sports, others of news, others of advertisements. Some pupils should be assigned to illustrate the newspaper. There should also be general news reporters. Real or imaginary articles should be submitted to the editorial staff (the teacher and two or three of the older pupils) for revision.

All articles should be well written, neat, concise, and interesting, and all should deal in some way with health and safety. The name of the writer should be signed to each article. Items selected for publication may be

pasted onto sheets and displayed on the bulletin board for a week or two. The preparation of all articles should be a matter of home assignment.

In working with this class newspaper, do not fail to impress pupils that newspapers can do much valuable work in educating the public with regard to health and accident prevention. Explain that the more space newspapers devote to a discussion of health and happiness instead of disease and unhappiness, the better for the people of a community. Make clear the significance of the saying, "the pen is mightier than the sword," and explain that this is only true if the pen is used for writing things of value to mankind.

SUMMARY

Man's most powerful ally is the sun. From the beginning of his history, his debt to the sun has been unlimited. His light, his heat, his growth, his health all depend on the life-giving rays of the sun.

Out of doors man receives the full benefits of the sun's rays; indoors some of these are lost. All the rays of the sun, those of heat and light, pass through ordinary glass, except the ultra-violet or health rays. Science has captured these by the recent invention of a glass which admits them to us indoors and has further controlled them by the use of artificial sunshine in the ordinary carbon arc light, the mercury vapor lamp and in the use of such foods as cod-liver oil with a high content of the health-giving ultra-violet rays.

The X-rays, the more powerful gamma rays of radium, used in skin ailments, and the cathode rays that kill bacteria are proving more and more of invaluable aid in modern medicine and surgery.

Fresh air, another of man's oldest and truest friends,

has long been greatly misjudged. It has been blamed for malaria and the respiratory diseases, and for many other diseases as well. The sick, and those who care for the sick, have done their best to keep fresh air out of the patient's room. Civilization has set itself to the task of protecting the body from fresh air by dressing warmly and keeping the windows closed. Through his methods of clothing, heating, and ventilating, man long treated fresh air as his enemy.

Bodily comfort, physical and mental efficiency, and health are all intimately related to fresh air. Fresh air has been proved to be of great value to sufferers from tuberculosis and other diseases. The open-air classes in modern schools testify convincingly to the value of fresh air. More and more is emphasis being placed by hygiene experts upon the need for more fresh air in classrooms. If it is impossible to bring enough fresh air indoors, one need not on that account want for it. It is a simple matter to go outdoors where fresh air abounds.

Getting out into the open gives a double advantage—fresh air and sunshine. Sunshine raises the morale; it is at once reflected in the individual's reaction to his environment; it promotes growth and health; it helps to sterilize air by its destructive action upon disease organisms. Unless we are friends with fresh air and sunshine as well as with our neighbors, we may find that our homes are uninviting, no matter how cordial we may be.

Some Questions for Consideration

1. How would you test the value of fresh air in the classroom?
2. What are the main differences between the sun worship of the ancients, and our modern emphasis on the value of sunshine?

3. Sunshine is especially good for children, consumptives, convalescents, and the depressed. How does it affect these different groups?

4. It is common experience that weather conditions affect the work of individuals. As between humidity, excessive heat, and lack of sunshine, which condition do you consider to be most depressing physically? Mentally? Emotionally?

5. "The sun is the earth's great ventilating system." Explain.

6. Science is now able to manufacture artificial sunlight which has remarkable health powers. Can you suggest some ways in which artificial sunlight is going to prove a boon to health?

References for Further Reading

Literature published by member associations of the National Health Council, 370 Seventh Avenue, New York City:

The National Tuberculosis Association, *The Modern Health Crusade; Health Training in Schools*, by Theresa Dansdill; *Journal of Outdoor Life*.

The American Child Health Association, *The American Health Congress Series*, Vol. III, page 73.

Literature published by the Elizabeth McCormick Memorial Fund, Chicago, Illinois.

CHAPTER VIII

THE QUESTION OF NUTRITION

The unfinished chapter. Food and shelter are the two fundamental needs of man, and, of the two, the need for shelter is the more easily satisfied. It has not always been so easy, however, for man to satisfy his hunger. The search for food has been at least partly responsible for many of the wars and great movements of population about which history can tell us. Doubtless such conflicts occurred before the beginning of written history—we can only guess that prehistoric man fought for his own share of a food supply, or wandered across continents in search of a place where plenty of food was a certainty.

Such movements are not all in the past. Within our own times, colonizations and large movements of population have been witnesses to man's compelling need for a steady food supply. Citizens of a country with a large population and limited natural resources, such as Japan, will go to other lands where they can make a better living. The Chinese colonization in Manchuria, said to be the greatest movement of its kind for many years, has for its purposes food, shelter, and peace. The remarkable moving-picture, "Grass", records the migration of some Asiatic tribes, who in certain seasons when their own pastures are barren, drive their herds for hundreds of miles through almost impassable rivers and mountains—to valleys where the precious grass can be found.

Food quality. So long as food is scarce and hard to get, men are concerned not at all with the quality, but only with its quantity. But standards of quality are quickly formed in a country such as our own, where, for

most of us, food is abundant. Also, scientific research has determined by experiment that foods have differing effects upon the body; experiment is determining the proportions of various foods which should be taken to satisfy completely the body's needs. This whole scientific study of foods may be termed the study of nutrition.

What is meant by nutrition. The word nutrition can mean a subject of such great and far-reaching importance as to concern the very life and vitality of a nation. It may, on the contrary, signify merely food of proper quantity and quality.

The *Century Dictionary* defines nutrition as "the assemblage of processes concerned in the maintenance and repair of the living body as a whole, or of its constituent parts or organs." According to this definition, nutrition deals with everything which influences the growth and repair of the body, its energy production, and its health. Those who accept this definition associate the word nutrition not only with food but also with fresh air, sleep, exercise, health habits, the condition of the teeth, tonsils, and other organs, sunshine, freedom from infection, and healthy emotions.

On the contrary we may take the position that nutrition deals with that which nourishes; with nutriment; in other words, with food. As teachers we should lean more toward the first definition, which makes nutrition a part of the whole health program, and not a thing apart from it, to be considered separately. We should be interested in raising the individual's knowledge of nutrition to the highest possible level.

What nutrition means to us. It has taken man centuries to learn that nutrition means more than a comfortable feeling in the stomach; that it means more than muscular strength and energy; that it means more than

growth in stature and in weight. We have come to realize that the kind of food we eat is indeed a matter of the first magnitude. For this we have to thank many distinguished investigators. One of them, an American, Dr. William Beaumont, studied digestion in the living stomach, and his researches made him one of the most progressive scientists of his time.

The French scientist, Antoine Lavoisier, studied chemical changes that take place in the human body, among them the oxidation of food and the production of heat. Graham Lusk and W. A. Atwater, American investigators, made exhaustive studies of the metabolic changes that take place in the body under different conditions. Dr. R. H. Chittenden, of Yale University, is credited with having introduced the idea of physiological economy in the selection of the diet. Doctors E. V. McCollum and Nina Simmonds, of Johns Hopkins University, have done experimental work in nutrition, and by basing their theories upon biological rather than chemical tests they have placed our ideas of nutrition upon a thoroughly modern and practical basis.

Dr. H. C. Sherman, of Columbia University, has been tireless in pointing out that consideration of nutrition should give equal recognition to the importance of calories, protein, mineral elements, and vitamins in diet.

Kinds of foods. In order to be properly nourished, each individual should know how to classify foods according to their function in the body, and how to choose a diet which will include the best possible balance of foods for his own needs—a choice which does not require difficult or technical knowledge in the case of a normal individual. Foods are classified, according to their composition, into four groups—fats and carbohydrates, proteins and minerals; each of these groups has its special

work to do within the body. The fats and carbohydrates are usually grouped together as the producers of heat and energy. Foods such as nuts, butter, cream, fat meat, the yolk of eggs, and oils provide fat; the starches found in potatoes, macaroni, and all cereals, and the sugars comprise the foods which are richest in carbohydrates. There is little danger that the normal individual will not get enough of fats and carbohydrates in his diet, for they compose the largest group of foods; there is greater danger that most of us will get more than the body can use.

The body must have material for growth and repair, too. This is furnished by the foods which are rich in proteins. These valuable substances are present in many foods, but in the greatest amounts in meat, cheese, fish, the white of eggs, and dried peas and beans.

The food we eat also contains minerals, or salts, which are necessary to the healthy body. The minerals most needed for the proper functioning of the human machine are sodium chloride, phosphorus and magnesium, in the liquids of the body, calcium or lime for the bones and teeth, iron for the blood, iodine for the thyroid secretions, calcium salts for the coagulation of escaping blood, and potassium in all tissues. All these minerals are present in the body in small quantities; calcium is ordinarily the mineral which is deficient in amount, if any are found lacking. The best source of calcium is milk. Leafy vegetables and fruits are good sources of most of the other needed mineral substances.

The question of calories. The fuel value or energy value of foods, that is, the amount of heat produced by their oxidation within the body, is measured by calories. A calorie represents the amount of heat necessary to raise the temperature of 1 cubic centimeter of water 1 degree Centigrade.

In estimating the caloric value of foods, we use what is called the large calorie. This is equivalent to 1000 times the small calorie, and, in popular language, represents the amount of heat necessary to raise the temperature of approximately a pint of water 4 degrees Fahrenheit. Expressed metrically, a large calorie (our standard heat unit in measuring the fuel value of foods) represents the amount of heat required to raise the temperature of 1000 cubic centigrams (1 liter) of water 1 degree Centigrade.

For example, a large apple (one weighing about 7.5 ounces) contains approximately 100 calories. When we recall that a person of ordinary size carrying on routine activities requires from 2500 to 3000 calories a day, plainly, if apples were his only article of food, he would have to eat from twenty-five to thirty apples daily in order to obtain merely sufficient heat and energy.

It is clear enough, therefore, that the heat or energy value of foods must not be the only consideration in choosing a menu. If it were, a man might secure all of the food he required, from the standpoint of calories, by eating bread alone. But he must eat foods which provide him with substantial amounts of proteins and minerals, as well. Milk, of course, furnishes the most perfect balance of all of the needed substances, and is called the perfect food. In the diet of an adult it is important, but it must be supplemented with a variety of other foods, according to the individual needs.

The vitamine family. There is another highly important factor in a well-balanced food supply. Experiments in feeding various diets to animals, carried on over long periods of time, proved that certain unidentified substances have much to do with the health and strength of the body, that is, its vitality—hence the new term,

vitamines. One by one, as a result of these experiments, there have been discovered four distinct vitamins, known respectively as *Vitamine A*, *Vitamine B*, *Vitamine C*, and *Vitamine D*. Vitamine A, sometimes called fat soluble A, stimulates growth. It is found most plentifully in butter and milk, egg yolk, cod-liver oil, and thin green leaves such as those of spinach, lettuce, celery, turnips, beets and radishes. Vitamine A is also abundant in liver, sweetbreads and kidneys.

Vitamine B is a water soluble, abundant in yeast, green leaves, and some animal tissues such as liver and heart, milk, eggs, plant seeds, and vegetables. Its presence stimulates the body processes, especially of digestion.

Vitamine C, a water soluble, is found in greatest amounts in fruit juices, especially in the juice of oranges. Tomatoes contain Vitamine C in plentiful amounts, and most other vegetables also contain it. The best sources of Vitamine C, however, are milk, oranges, and tomatoes. It was the absence of this vitamin in the diet of sailors that made scurvy a common ailment of sea-faring men.

Vitamine D prevents rickets, a disturbance of nutritional functions, the most noticeable manifestation of which is abnormality in the growth of bones. Vitamine D is not usually present in adequate amount in the normal diet of the growing child; for that reason the diet of young children should be supplemented with cod-liver oil.¹

Nutrition an individual problem. Excepting in quality—fuel value, proteins, minerals and vitamins—the diet of one person may be quite unlike that of another, and yet satisfactory from the point of view of nutrition. Any person's diet should bear some scientific relation to his age,

¹Sunshine is also a preventive of rickets. The growing body should be exposed to the sunshine to a reasonable extent, especially during playtime.

his work, his digestive powers, his health, and the season of the year. For example, the growing body needs protein foods to a greater degree than does the body that has attained its growth. The person who leads an active life needs more calories in his diet, and more protein, than does one who leads a sedentary life. During summer months the amount of fuel foods should be reduced. An undernourished body needs a greater quantity of food as well as a better quality of food. It needs food in which all of the fundamental principles of scientific feeding receive proper consideration. On the contrary, the person who is overweight needs to reduce his intake of fuel and protein foods.

Nutrition and health. Nutrition has much to do with health. Along with fresh air, exercise and rest, it is a vital factor in building up resistance to disease.

The well-nourished body has tremendous advantages over the undernourished body in fighting against tuberculosis. In fact, food is one of the best defenses against this disease. With fresh air, sunshine, rest, and medical attention, food constitutes the best treatment for tuberculosis known to the medical world.

During convalescence following any disease, a well-nourished body is more likely to hasten recovery, other things being equal. Intelligent attention to the laws governing nutrition is also of help in avoiding such nutritional diseases as eczema, scurvy, rickets, pellagra, and the more uncommon beri-beri.

SOME SUGGESTED METHODS

Weighing and Measuring

The best way to interest children (and their parents) in a nutrition program is by weighing and measuring pupils and sending reports of conditions into the home.

In most cases, parents are the determining factor in tipping the scales, literally as well as figuratively. They can tip the weight toward good nutrition or toward poor nutrition. Resourceful teachers can motivate classwork in nutrition with more or less success. The chief aim is to make work done in class carry over into the home, because it is in the home that the foundation work of sound nutrition is laid in principle and in practice. Parents, not children, determine the amount and kind of food that go upon the table and into the lunch box. Interest the parent in the child's nutrition, and your efforts will result to advantage.

Each pupil should have a health book, as simple or as elaborate as the child's interest determines. Record in this the name, the age (at nearest birthday), grade, height (in stocking feet), weight (in indoor clothing), normal weight for age and height (according to standard charts), and the pupil's per cent of deviation from normal.

The weighing should be done at school, but if scales are not available there, it may be done at a near-by store. Height should be measured at school. The pupil should stand with heels, back and head against a wall, and the distance measured from the floor to a line on the wall made by a book or crayon box placed on the head and at a right angle to the wall.

Record each pupil's measurements in his health book. Then dictate a letter for pupils to copy in their books, or, if preferable, write the letter on the blackboard. This letter is designed for reading by the parents.

The letter should make clear, in simple language, that the object of the nutrition program is to promote normal growth in height and weight, and a normal development of body tissues and organs. It is to promote increased health, strength, and well-being. It is to prolong youth

and the years of active service that follow, and to postpone old age.

Some of the ways that parents can help in carrying out the program should be explained in the letter. For example, meals should be served regularly; they should include milk, eggs, fruits, and vegetables, especially the leafy vegetables such as spinach, lettuce, celery, etc. Parents should see to it that children get long hours of sleep, that they get more hours of play in the fresh air and sunshine, and that they be taught to give attention to regular health habits. Parents should also be advised to see that the child's physical defects are remedied.

The letter should conclude by asking the parents to sign their names in the health book. They should also state which parent or grandparent the child most resembles, and they should tell whether that person, in youth, was short, medium, or tall of stature, slight, medium, or heavy of weight. This information enables teachers to interpret the pupil's height and weight progress more advantageously. There is truth in the maxim, "like father, like son."

Height and weight measurements should be taken every month, if possible, and then compared with those of the previous month and with those given in the *Baldwin-Wood Charts* on pages 123-124. Investigations have shown that growth in both height and weight is most rapid during the months of autumn and spring. The aim set for each pupil should be that of surpassing his own previous record, not the record of some other pupil.

A general letter to parents touching upon some phase of health should always be set for pupils to copy into their health books a few days before the books are taken into the homes. In special cases the teacher may send a personal message. Sometimes, in such cases, the find-

WEIGHT—HEIGHT—AGE TABLE FOR GIRLS

Height Inches	5 Yrs.	6 Yrs.	7 Yrs.	8 Yrs.	9 Yrs.	10 Yrs.	11 Yrs.	12 Yrs.	13 Yrs.	14 Yrs.	15 Yrs.	16 Yrs.	17 Yrs.	18 Yrs.
38	33	33												
39	34	34												
40	36	36	36											
41	37	37	37											
42	39	39	39											
43	41	41	41	41										
44	42	42	42	42										
45	45	45	45	45	45									
46	47	47	47	48	48									
47	49	50	50	50	50	50								
48		52	52	52	52	53	53							
49		54	54	55	55	56	56							
50		56	56	57	58	59	61	62						
51			59	60	61	61	63	65						
52			63	64	64	64	66	67						
53			66	67	67	68	68	69	71					
54				69	70	70	71	71	73					
55				72	74	74	74	75	77	78				
56					76	78	78	79	81	83				
57					80	82	82	82	84	88				
58						84	86	86	88	93	92	101		
59						87	90	90	92	96	100	103	104	
60						91	95	95	97	101	105	108	109	111
61							99	100	101	105	108	112	113	116
62							104	105	106	109	113	115	117	118
63								110	110	112	116	117	119	120
64								114	115	117	119	120	122	123
65								118	120	121	122	123	125	126
66									124	124	125	128	129	130
67									128	130	131	133	133	135
68									131	133	135	136	138	138
69										135	137	138	140	142
70										136	138	140	142	144
71										138	140	142	144	145

PREPARED BY BIRD T. BALDWIN, PH.D., AND THOMAS D. WOOD, M.D.

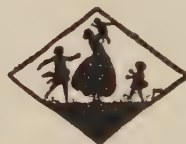
When taking measurements, remove the child's outdoor clothing, shoes and coat. Take heights with a square, consisting of two flat pieces of wood joined at right angles (a chalk box will serve). The child is placed in a good erect position, with heels and shoulders against the wall or wide board, upon which has been marked or pasted an accurate measure. Age is taken to the nearest birthday.

Published by

The American CHILD HEALTH Association
370 Seventh Avenue, New York City

WEIGHT—HEIGHT—AGE TABLE FOR BOYS

Height Inches	5 Yrs.	6 Yrs.	7 Yrs.	8 Yrs.	9 Yrs.	10 Yrs.	11 Yrs.	12 Yrs.	13 Yrs.	14 Yrs.	15 Yrs.	16 Yrs.	17 Yrs.	18 Yrs.	19 Yrs.
38	34	34													
39	35	35													
40	36	36													
41	38	38	38												
42	39	39	39	39											
43	41	41	41	41	41										
44	44	44	44	44	44										
45	46	46	46	46	46										
46	47	48	48	48	48										
47	49	50	50	50	50	50									
48		52	53	53	53	53									
49		55	55	55	55	55	55								
50		57	58	58	58	58	58	58							
51			61	61	61	61	61	61							
52			63	64	64	64	64	64	64						
53			66	67	67	67	67	68	68						
54				70	70	70	70	71	71	72					
55				72	72	73	73	74	74	74					
56				75	76	77	77	78	78	80					
57					79	80	81	82	83	83					
58					83	84	84	85	85	86					
59						87	88	89	89	90	90	90			
60						91	92	92	93	94	95	96			
61							95	96	97	99	100	103			
62							100	101	102	103	104	107	106		
63							105	106	107	108	110	113	111	116	
64								109	111	113	115	117	118	123	127
65															
66								114	117	118	120	122	127	131	134
67									119	122	125	128	132	136	139
68									124	128	130	134	136	139	142
69										134	134	137	141	143	147
										137	139	143	146	149	152
70										143	144	145	148	151	155
71										148	150	151	152	154	159
72											153	155	156	158	163
73											157	160	162	164	167
74											160	164	168	170	171



PREPARED BY BIRD T. BALDWIN, PH.D., AND THOMAS D. WOOD, M.D.

These new Weight-Height-Age Tables, which are similar to the Wood Tables (formerly issued by the Child Health Organization of America), are the most accurate available.*

These tables should be used as a means of interesting the child in his growth, and as a factor in determining the child's health and nutrition.**

* Representing a large group of presumably healthy children most of whom are native born. Tables for technical workers with detailed information can be secured from the American CHILD HEALTH Association.

** Encourage the annual physical examination of every child by a physician.

ings of the school doctor, dentist, nurse, or nutrition expert, likely to be of interest to the parents of the child, may be included.

Much excellent material for use in the health messages that the teacher sends to the parents may be found in a pamphlet, *Is Your Child Ready for School?* (Bulletin No. 19 Health Education Series), one of the publications of the United States Bureau of Education, which may be obtained by writing to that bureau in Washington, D. C.

Devices for Teaching

At times the teacher can effectively teach health by using a watch, a pencil, a pocket knife, a book, or some other item of personal belongings. The following suggestions explain how these articles may be used.

Using a watch: Explain some of the devices used for keeping time before the watch was invented.

Explain how time was once kept by means of watching the moon and the stars and the sun.

Explain the sundial. Make clear that we should all be like the sundial and record only the sunny hours. We should let others tell of unhappy hours.

Explain the hourglass, which, as someone has said, contains more gold in its sands than all the creeks of the Yukon Valley.

Finally, give a talk about watches. Explain that a watch has to be wound if it is to run, and from that develop the idea that sleep is to the child what winding is to the watch.

A watch practices running all the time, yet runs no better for the practice. Practice, however, does make athletes run better.

Watches need to be cleaned, as do human beings. They are best cleaned with oil and gasoline. Human

beings are best cleaned by using plenty of water and soap.

Watches have hands, but they cannot protect their faces. Children and grown-ups should be able to use their hands for protection.

The watch has a balance wheel. A human being's balance wheel is the power of self-control.

Watches have jewels. The more jewels a watch has, the more valuable it is. Our jewels are our teeth, our eyes, our ears.

Watches come in thick and thin models, just as boys and girls do. A thin model watch can never be changed to any other model, a "thin model" child can usually gain weight by eating proper food. (Make this an opportunity for a talk on nutrition.)

Using a pencil: Consider some ways in which people "make their mark," that is, on stones; with pen, ink, or chalk; in the bark of trees (Valentine sentiment); on the sands on the beach; and in the deeds of life.

No matter how sharp pencils may be they finally grow dull with use. The contrary is true of boys and girls, if they are of the right material.

Pencils grow short with exercise. Boys and girls lengthen with exercise, provided they get enough of the right kind of food, and plenty of sleep and fresh air.

Human beings cannot erase their mistakes as easily as does the pencil.

Using a pocket knife: The best knives are made of well-tempered steel; if the temper is lost, the knife is of little value. Human beings also lose their value when they lose their temper.

A knife does not know the meaning of loyalty: it will cut its best friend just as quickly as a stranger.

The table knife has lessened the work of the teeth; the teeth need exercise, just as do muscles and the brain.

Using a book: Each person's life is like a book: it may be interesting, colorless, inspiring, full of fiction or completely true.

Lives are illustrated like books. Some are illustrated with happy faces, others with sour dispositions.

Covers help to make the book. Clothing, physical appearance, posture, cleanliness, taste, help to make the man.

A life, like a good book, should be dedicated to an ideal.

Blackboard Work



Figure 33. One Way of Making Food Good or Poor

1. Food may be either good or poor, according to the care it receives. This care includes refrigeration, protection from dust and insects, attention to cleanliness, methods of cooking and of seasoning. Discuss methods of handling food so that it may be kept good. Explain why some good foods become poor when carelessly handled and uncared for.

Print the word F O O D on the blackboard. Change the word to G O O D by slightly altering the letter F. (See Figure 33.) Print F O O D again and show how easy it is to change the word to P O O R. Use this

device to emphasize the importance of selecting food wisely and handling it properly.

2. Draw a blackboard outline of several bottles of milk—eight in all—arranged one behind the other as in Figure 34. Discuss some of the reasons why milk is a valuable article of food, and then label the bottles so as to spell STRENGTH. Strength is useful in work, in

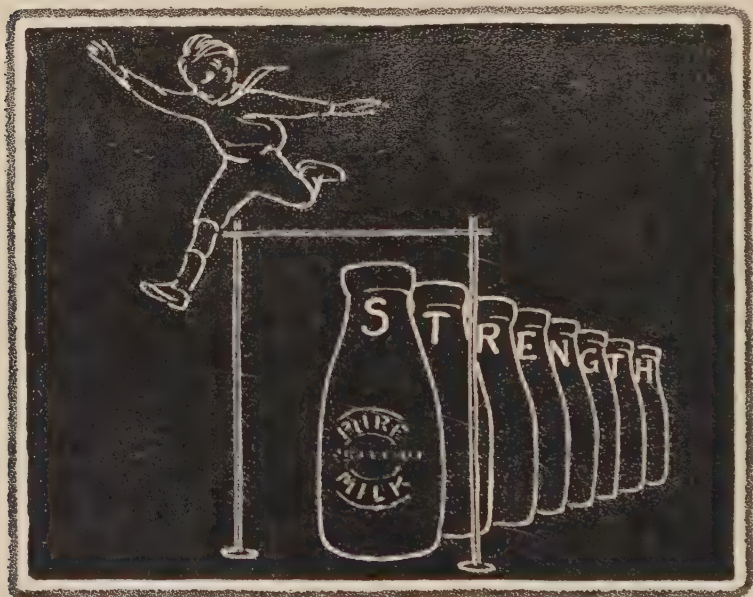


Figure 34. Over the Bar in the Game of Health

helping people in trouble, in avoiding accidents, in play, and in other ways. Draw the outline of a boy jumping off of a milk bottle and over the bar. Explain that this boy believes in exercise in the open air and sunshine, in milk at each meal, and in the other rules of the "health game."

3. Draw three squares on the blackboard, side by side, as shown by Figure 35. Explain that those are the square

meals one should have each day. They are not all of the same size, but each contains some of the four things every meal should include—fuel foods, protein, minerals, vitamins. In one of the squares write the names of food that make a square meal. Explain that many other combinations of food also constitute a square meal, and that a square meal does not always have to be a big meal. A square meal is one that meets the needs of the body.

SUMMARY

As understood today, knowledge of nutrition is one of the most important phases of health work. More than

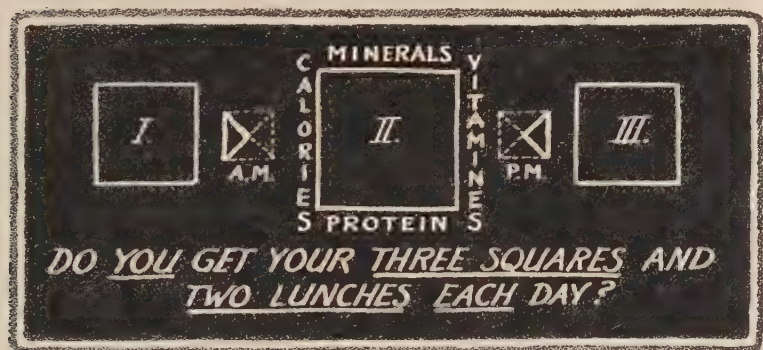


Figure 35. A Square Meal

any other single factor except heredity and environment, nutrition determines the individual's health and life span.

The public is now aware that much malnutrition exists even in this country where wages and living conditions surpass those of any other region in the world.

Classification of persons as overweight or underweight, according to standards now commonly used, is likely to be incorrect. In estimating the effect of nutrition, the individual type must be considered. People are slight,

medium, or heavy because of heredity rather than because of diet. Children of slight parents are likely to be of the slight type, and vice versa.

When considering the type of a child's ancestors, one must be sure that the type was not influenced by ill health. As a rule a slender child, whose parents are slender, is healthy, provided the slenderness of the parents was a matter of heredity and not of disease.

In any program of weighing and measuring, teachers should hesitate to say that results in any given case are due to malnutrition. The purpose of any such program is to interest the child's parents and the child himself in the latter's nutrition.

Teachers should make clear that nutrition is determined not only by food but by other factors. Nutrition concerns the healthy child as well as the undernourished one. The United States Public Health Service has proved that, according to present standards, many children have the weight of the group average although they are actually suffering from malnutrition. The effectiveness of any nutrition program will be greatly limited if such children are accepted as being up to proper standards.

That teacher will do most service to health who regards the age-height-weight program as an educational device designed to interest the pupil and his parents in the problems of nutrition and as a method of indicating the child's physical condition.

The diagnosis of nutrition and its effects is a matter for the physician and not for the teacher.

Some Questions for Consideration

1. In what ways does the purchaser pay two prices—the purchase price and the physical price—for the food he eats?
2. Why is milk sometimes called the yardstick of nutritive efficiency?

3. Do you suppose scientists will ever be able to make a synthetic milk that will rival natural milk in nutrition value? Give reasons for your answer.

4. Do you distinguish between being "fed" and "filled"?

5. Experiments in the feeding of animals are an effective means for teaching some of the facts of diet. Do you think that it is advisable to conduct experiments in school which show the effect of a poor diet on animals? Or do you consider that school experiments should emphasize the results of an ideal diet, rather than an insufficient diet?

6. What are some of the ways in which you can make the lunch hour at school more than a matter of calories? One way would be to promote the social side of eating. What are some other ways?

7. What are the food fads which you have to contend with in your school? What are some of the food traditions science has exploded in recent years?

8. The big problem in nutrition is the parent—not the pupil. What are some of the ways in which the parent can be aided in the problem of effectively managing and guiding the child? Is it necessary that one be a parent in order to understand child psychology?

9. Someone has said that the phrase, "I don't like," should be outlawed at every meal hour. What, if any, are the reasons for such a statement?

References for Further Reading

Carpenter, F. G., *How the World Is Fed*. (The American Book Company.)

Holt, L. E., *Food, Health and Growth*. (The Macmillan Company.)

McCollum, E. V. and Simmonds, Nina, *Food, Nutrition and Health*. (Lord Baltimore Press.)

Rose, M. S., *Feeding the Family*. (The Macmillan Company.)

Government Bulletins:

Diet for the School Child. (Health Education Series, Number 2.)

Bureau of Education, Department of the Interior, Washington, D. C.

References on the Physical Growth and Development of the Normal Child, Publication No. 179, Children's Bureau, Department of Labor, Washington, D. C.

Weight and Height as an Index of Nutrition, Public Health Report, January 12, 1923, United States Public Health Service, Treasury Department, Washington, D. C.

CHAPTER IX

TUNING IN ON THE ENVIRONMENT

Our special senses. For countless generations man has been "tuning in" on his environment with remarkable success and much profit. His receiving set, a gift from Nature, is priceless. Maintenance cost of it is small, but the cost of repairs on this wonderful five-part receiving set is sometimes enormous. This is true especially of the sense of sight and of hearing. The other special senses—smell, taste, and touch—are less likely to get out of order.

The five special senses cover a wide range of reception. We can see the distant sun and stars; we can sit in our homes and hear music and voices from all parts of the earth; we can smell the delicate odors of fruit and flowers; we can feel the pressure of bodily contact. These senses are really exterior senses; they deal with external conditions. The term *environmental senses* conveys precisely the purpose of man's five special senses.

Ours are multiple senses, also, for each of them receives a variety of sensory impressions. The visual sense, for example, receives impressions that deal respectively with size, shape, color, solidity, and distance. The auditory sense records the pitch and intensity as well as different kinds of sounds. The olfactory organs (the sense of smell) can differentiate a wide variety of odors. Man is not limited to one sensation of taste; he has four fundamental sensations, salt, sweet, acid and bitter. The fifth environmental sense, that of touch, distinguishes hardness, softness, roughness, smoothness, wetness, weight, and shape.

Those who keep this marvelous "special senses" re-

ceiving set in good condition, may realize only in part how precious is the gift that Nature bestows upon us at birth. The mechanism of the special senses, their proper care, and the ways in which we can use them by "tuning in" on our environment with more purpose and with better results are all matters which concern us as individuals, and especially as teachers deeply conscious of professional responsibilities.

The conservation of eyesight. At no time in history has there been so keen an interest in conserving eyesight as at present. Public health agencies, industrial organizations, philanthropic interests, and educators have united their efforts and resources in an aggressive, purposeful, and enthusiastic sight-saving program.

The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, coöperating with The National Committee for the Prevention of Blindness, has prepared a special report on conserving the sight of school children. This report estimates that about 12 per cent of the school population has defective vision. This means that educators face the problem of reducing as much as possible the visual handicaps of approximately three million children. Such children are doubtless found in every classroom.

Sight is commonly regarded as the most important of the special senses. Unfortunately, it is the sense most likely to be naturally defective or to become so through injury and misuse. Unless corrected, defective vision handicaps the child's progress in school; discourages him; frequently causes him to be classed as stupid; takes away from him much of the joy of play; and, finally, turns him over to an unsympathetic world, there to find his niche in life and happiness in achievement of some kind. Such an undertaking is difficult at best. Add to

it the handicap of uncorrected defective vision, and the result is a situation which society cannot afford to look upon disinterestedly.

Teachers should strive to make the physical condition of classrooms such that pupils will experience no unnecessary eyestrain. They should see that window shades are so adjusted as to admit most light with least glare. The teacher or a responsible pupil should attend to adjusting shades and adapting them to the changing light. Shades should be so arranged that light can enter through the upper part of the windows as well as through the lower part. Children with uncorrected defective vision should have seats at the front of the room.

Since posture affects vision, pupils should not be seated at desks where they have to bend forward while they work. Doing so brings the book too close to the eyes. Pupils should be able to sit naturally and still have their work on the desk at a distance of from 12 to 14 inches from the eyes. Natural light should come from the left. Artificial light should come from the ceiling.

Symptoms of eyestrain are usually well marked; they include headache, blurred vision, frowning, inflamed eyes and eyelids. Children with defective sight usually have difficulty in reading work placed on the blackboard. Defective eyesight may also reveal itself in the pupil's inability to catch a ball well. Suspected cases of defective eyesight should be referred to the school nurse or doctor. Directions for giving the *Snellen Test for Defective Vision* appear on page 140 of this book.

From time to time a check of those children ordered to wear glasses should be made in order to determine whether or not they actually do wear their spectacles as required. Teachers should also try to make sure that those who wear glasses keep them clean at all times.

Whenever a child complains that his glasses are uncomfortable, his eyes should be re-examined to find out whether or not he needs to be re-fitted.

It should be kept in mind that some cases of defective vision are progressive. For such cases, new glasses are necessary from time to time. Glasses sometimes get out of adjustment because of some accident to the frame. Teachers should be on the watch for such accidents.

Defective hearing. A pupil with defective hearing finds it difficult to "tune in" on his environment, just as does a radio operator whose set is not working properly. The hard-of-hearing pupil is unable to "pick up" distant stations; the stations that he gets are more or less unsatisfactory in volume and clearness; and he is troubled at times with a sort of static. Interpreted literally, this means that the hard-of-hearing pupil has difficulty in hearing sounds which are well within range of the normal ear; the sounds he hears are usually muffled and indistinct; at times he may be troubled by buzzing and ringing noises in his ears. Such a child is indeed fortunate if by means of some adjustment his aural "receiving set" may be improved. It should be given prompt attention.

Defective hearing may have far-reaching effects. It handicaps the child in his effort to master school work; it keeps him from developing socially; it impedes his professional and economic advance. Many types of auditory defects persist through life; frequently they gradually grow worse and finally deprive the unfortunate of all power to hear. Improved methods of testing and diagnosis are revealing the seriousness of the problem of the deaf and hard-of-hearing.

It is not easy for the teacher to single out the hard-of-hearing pupil from among others. Frequently the child himself does not realize his condition. This is especially

true if he has always had defective hearing, or if his condition develops gradually. The one approved way to detect the hard-of-hearing is to test the hearing of all pupils. Directions for doing this appear under Some Suggested Methods at the end of the chapter. Dull children, inattentive children, and children who frequently have earache or discharging ears should have their hearing tested as soon as possible after the teacher discovers the characteristics mentioned. Children with a history of frequent earache or running ears should be examined by a physician as soon as possible.

Many cases of defective hearing result from the so-called children's diseases, especially scarlet fever, measles, mumps, and whooping cough. Diseased and enlarged tonsils and adenoids also frequently cause ear trouble. The common cold often causes earache, running ears, and defective hearing. The teacher's part in aiding the deaf and hard-of-hearing pupil is (1) to give instruction in the hygiene of the hearing mechanism, and (2) to test each pupil's hearing carefully (unless that is done by the school nurse or physician), so that necessary corrective measures may be undertaken at once.

The sense of smell. Interest in the olfactory organ is largely a social matter rather than a health matter. Ordinarily little can be done to safeguard the sense of smell. In general, few people suffer loss of the power to smell, except as it may be temporarily affected by a head cold.

As a rule, man is not handicapped by inability to smell. He may be handicapped because of the unpleasant odors of his person that others sense only too well. Teeth, tonsils, and nasal cavities are often sources of disagreeable odors. Everyone should maintain these tissues in as healthy condition as possible and so avoid any possibility of annoying others by this means.

Occasionally, when proper hygiene of the body is neglected, body and clothing odors become perceptible. The odor present in poorly ventilated classrooms is chiefly due to this neglect. Unfortunately, occupants of rooms where the air is foul are themselves usually unaware of bad odors because those develop gradually. By leaving the classroom for a minute or so once an hour, the teacher can better judge as to the adequacy of ventilation.

The sense of taste. Taste is the special sense that often acts as master rather than servant. All other senses serve; taste alone requires that it be served. This, unfortunately, is due to the misuse that man makes of his taste mechanism.

An interesting characteristic of the sense of taste is its influence upon man's likes and dislikes for certain foods and drinks. Except in the case of taste, one rarely finds a person who is "queer" in his special sense development. Yet those who develop "queer" tastes are reasonably common. Sometimes a singular taste is developed for one thing, at other times for something else; but whatever strange turn a person's taste may take, the whim of taste is commonly obeyed. All teachers know of the fickle appetites of children who have been permitted to pamper their taste until unnatural appetites develop. Children should be encouraged to master their tastes and to eat suitable foods even though they at first think they dislike them. A good test of will power is the control exercised over taste.

The sense of touch. Touch is probably the most primitive of the special senses. It covers the widest field, and more than any other sense, it is intimately linked with existence. Among the blind, touch even serves as a substitute for the sense of sight.

In the commercial and industrial world, touch is devel-

oped to a high degree; for example, in touch typewriting. Man's tactile sense is nowadays being developed as never before. Its serviceability to us depends upon its acuteness, and we should consciously avoid anything that will lessen or dull our sense of touch. Tight shoes, closely fitting clothing, hats that are a bit too small, and overly tight garters are all contrary to good judgment. If the sense of touch finally fails to react vigorously, the trouble is of our own making.

Power of the senses. Contrary to common opinion, man's senses are not losing their power at all. Only the emphasis is changing. Men of today may not see so far as did the savage, but they see more. They may not hear so *intensively*, but they hear more *extensively*. They may not be able to detect odors at so great a distance from the point of origin, but they are able to detect a greater number of odors. And, as was noted above, man's sense of touch is today developed as never before in his history. If, at times, it may seem that man's special senses are deteriorating, closer examination will reveal that such is true only in special cases; and in those one will usually find an accompanying deterioration of all the individual's powers.

SOME SUGGESTED METHODS

Healthgrams

Left light is right. Why?

Some fingers are worse than cinders. Why?

Hands off—and fingers out—of the ear. Why?

Stop, Look, and Listen—for the good, not the bad—in Life.

Testing the Eyesight

All pupils should have their eyesight tested by the school doctor, nurse, or teacher. The *Snellen Chart* (reproduced on page 139) may be used for this work; it may

be bought from any concern dealing in physician's supplies. An equally good chart for the purpose, which is equipped with full instructions for use, may be purchased for a small amount from The Eyesight Conservation Council of America (Times Building, New York City).

When the *Snellen Chart* is used, the pupil should stand or sit about twenty feet distant from it. One eye should be tested at a time. The eye not being used may be covered by a small piece of cardboard. The right eye should be tested first. The pupil should begin reading the top line of letters at the left-hand side, and he should continue reading one line at a time until he is unable to distinguish any more letters.

A person who can read the 20-foot line of letters at a distance of twenty feet is regarded as having normal vision unless he has to strain his eyes to see. Testers should remember that some persons with defective eyesight can pass a standard vision test by straining. Such persons should not be regarded as having normal vision until a further test by a physician or competent oculist has proved that the eyesight is normal.

According to the *Snellen Chart*, pupils will be classified in one of three groups: I. Those of normal visual acuity. II. Those whose vision is of normal acuity under strain. III. Those of subnormal visual acuity. Classification in Group III is usually the result of nearsightedness.

Pupils who classify in Group II or Group III should be retested as noted above.

Testing the Hearing

It is as important to test the hearing of children as to test their eyesight. Some authorities claim that it is even more important to do so, because the child with defective eyesight is usually more readily discovered. He commonly

shows symptoms that suggest visual difficulty. Among these are headaches during school hours; difficulty in reading blackboard work; holding the textbook too close to the eyes; squinting without apparent cause; being unduly annoyed by glare. The child with defective hearing, on the contrary, may show few signs of his handicap, if, indeed, he shows any at all.

A number of methods are used to test hearing. Among them are the tuning-fork test, the Whipple test, the watch test, the whispered voice test, and the audiometer test recently developed in the laboratories of the Bell Telephone Company. Only the last two are described here.

When giving the whispered voice test, the examiner stands at a distance of twenty feet behind the pupil. The pupil closes one ear with the palm of his hand and then repeats aloud the words, numbers, or letters which the examiner whispers clearly and distinctly. If the pupil cannot hear the whispers, the examiner moves nearer and repeats the test until finally his whispers are heard. The pupil's acuteness of hearing is designated by a fraction whose denominator is 20, and whose numerator is the number that indicates the distance in feet at which the examiner stood when making the test at the time when the pupil became able to hear the whispers.

The audiometer is a device, dependable because of its accuracy and helpful because its findings may be retained for comparison with subsequent findings. Results obtained by using the audiometer may be used to show whether or not a certain condition of deafness is progressive. Further, the audiometer may be used to test the hearing of all the pupils in a room at one time.

The audiometer consists of a phonograph, a special record, and a set of ear phones for each pupil. The phonograph record reproduces a series of spoken numbers

whose sounds grow weaker as the record progresses. Each pupil is supplied with a record sheet upon which he writes the numbers that he hears. By examining the pupils' records and comparing them with a key chart, the teacher can easily determine the pupils that fail to hear and those that do not hear well. Where conditions seem to justify, individual examinations may be given.

Blackboard Material

The following suggestions should prove helpful to the teacher in impressing upon pupils the importance of protecting the special senses, especially sight and hearing, from injury.

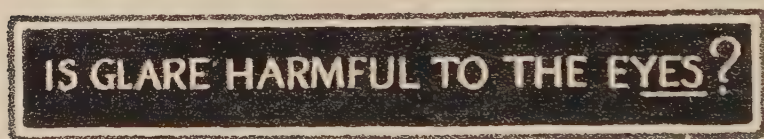


Figure 36. A Question with an Answer

1. **The eyes.** Discuss with pupils the need for protecting the eyes from accidents and strains. Explain that the eyes must be protected from infections such as result from using soiled handkerchiefs and towels which someone with sore eyes has been using. Print EYES on the blackboard. Ask pupils if the care of the eyes is important. Underline the last three letters in EYES and so make the answer YES. (See Figure 36.)

2. **The eyes in "information."** It is impossible to spell information correctly without using two *i*'s, and it is exceedingly difficult to secure it without using two *eyes*. Some people, Helen Keller, for example, have been able to gain much information without using their eyes at all. Gaining information is a difficult task if the eyes are weak

or sightless. The first thing needed to make *information* is an *i*; and *information* cannot be completed without using another *i* also. The lesson is not to dot the *i*'s but to protect the *eyes*. We use our eyes in writing all the time, but we use the *i*'s only occasionally. The teacher can easily bring out all these ideas by printing INFORMATION (See Figure 37.) in large capital letters on the blackboard and pointing to the *i*'s as she talks.

3. **The ears.** In connection with the lesson on the care of the ears, call attention to the EAR in EARNING and in LEARNING. The lesson may also be brought out that

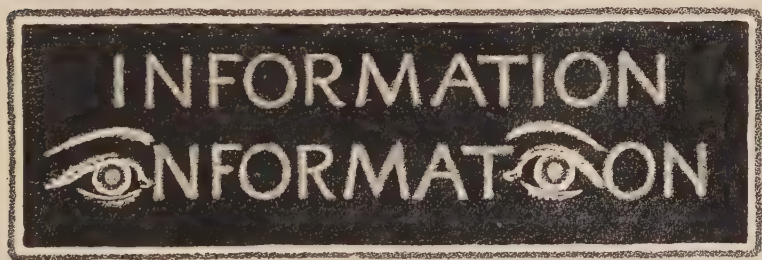


Figure 37. The Best Way to Spell and to Get Information

the ear should have EARLY medical attention in every case that does not promptly respond to home treatment. Ear troubles respond best to treatment when it is given in good season. The old adage, "It is never too late to mend," was never intended to apply to aching and discharging ears.

A class demonstration: Health Magic. Most children are interested in magic. It is a good approach in teaching hygiene because of the ways in which Nature works her magic charms upon mankind. The following suggestions explain how to use magic in the classroom and make it carry over into the health program of the school.

Resourceful teachers can devise other ways of using the child's natural interest in things mysterious.

Before coming into the presence of the class, invert a drinking glass on a sheet of plain white paper and mark a circle around it. Cut out the outlined paper disc. Rim the edge of the glass with paste and attach the paper disc, thus sealing the glass. After the paste dries, trim off any of the paper that shows around the edge of the glass. When the glass, with its paper top, is placed top-side down on a sheet of the same kind of plain white paper, the illusion is that of an ordinary inverted glass resting on a sheet of paper; with the sheet of paper, the glass, and a large clean handkerchief, you are prepared to demonstrate.

Place the handkerchief over the inverted glass. Take a small piece of red paper to represent a germ; let the class decide which germ it is to represent. You can now show the magic effect of the laws of health in making disease germs disappear.

Place the paper germ on the sheet of paper. Put the inverted glass over it, taking pains to keep the glass covered with the handkerchief, so that the children do not see that the paper "germ" is hidden under the paper on the glass. Before removing the handkerchief, discuss with the pupils some of the health agencies that are most effective in combating bacterial diseases. Among these are: (1) Fresh air (have a pupil open one or more windows); (2) sunshine (raise the shades if the sun is shining); (3) cleanliness (the necessity for a clean handkerchief has already been mentioned; hands should be clean, also); (4) time (disease cannot be destroyed in a moment; much time is needed); (5) care (in handling infected articles; for example, sputum and other excretions of the sick, soiled handkerchiefs and clothing, silver and

dishes used by sick people); (6) health knowledge (including knowledge of the different ways in which germs are transmitted from the sick to the well).

You are now ready to show the magic power of hygiene and sanitation in making germ diseases disappear. Call upon the laws of health "this germ to seize and destroy forever the source of disease." Remove the handkerchief, leaving the glass in place. The red paper germ will be hidden from sight by the paper glued to the rim of the glass. Hold your hand on the bottom of the glass (it is now the top) so no one may lift it and thus expose the trick.

A book of Health Magic. Pupils may be interested in making a book of directions for doing magic health tricks. The book may be made of sheets of paper appropriately decorated and illustrated. The directions may be copied from the blackboard after the teacher has used them as the basis for a discussion on some phase of health or on a related topic. The book may be called "Health Magic."

In addition to the so-called tricks suggested below, pupils themselves will be able to suggest subjects that may well be included in the book. Some of these may be: The Magic of Milk, Taking Chances, The Sun's Transformation Act, The Sun as the Great Magician. Pupils will often be interested to tell the class about magic tricks they have learned, and those, too, may be made the basis for lessons in health.

Home Assignment

Poster-making. Someone who must have known children well has said, "Not having, but making, is life's greatest joy." Children are interested in nearly every kind of construction work; they find some of their greatest joy in such activity. Making posters, especially

posters about health and safety, gives them opportunity to make something of value and with a definite purpose in mind.

A poster should speak for itself, as the word shows: A poster Puts Over Some Truth Effectively, Readily. A good poster catches the eye; it suggests an idea. The greater the thought behind a poster, the greater the thought (in the mind of the reader) before the poster. A poster posts—and at a single glance.

The teacher should explain that a poster must first of all be cleverly arranged. It must depict action. It must be colorful. It must be simple. It must be truthful. Because the eye and mind are caught by the unusual, a good poster must be original. The printing on a poster must be large enough to be easily read at a glance.

If posters made by pupils are entered in competition, some method of keeping secret the names of the makers must be used. Write the maker's name on a slip of paper, seal it in an envelope, and attach the envelope to the back of the poster. Mark the envelope with a symbol, word, or number, and also mark that on the poster. When the winning poster has been selected, the maker of it may be discovered by opening the envelope that bears the symbol which appears on the poster.

After the posters have been made, they may be displayed, one or two at a time, on the bulletin board, or they may be hung about the classroom to show the progress of the pupils. If it seems well to do so, the two or three pupils who have made the best posters may be permitted to take their work into other classrooms and there give little health talks on the topics illustrated by their work. At any rate, the teacher should make some good use of the pupils' work, or children will feel that the effort expended was hardly worth while.

SUMMARY

Among civilized people, this is an age of specialization in almost every activity of life. Man's endowment of the five special senses makes this possible. Credit for man's success as a specialist is chiefly due to the eyes, the ears, and the sense of touch. It is scarcely conceivable that progress in the arts and crafts would have been possible without them. Oddly enough, the very specialization made possible by the eyes is in turn placing upon those organs a strain that weakens them, and must be guarded against. And what is still more remarkable, the achievements due to specialization (in medicine and surgery) serve to give man normal service from those same weakened organs. By means of the work of specialists the sense of hearing is also aided when it fails to function properly.

To meet the strain which the requirements of education, industry, and society place upon the eyes, a national movement for the conservation of eyesight has been inaugurated. The National Education Association and the American Medical Association, through its Joint Committee on Health Problems, and with the coöperation of the National Committee for the Prevention of Blindness, has prepared an exceedingly helpful and comprehensive program for conserving the sight of school children. The Eyesight Conservation Council of America is also carrying on an effective program in the schools and in the industries of our country.

Paralleling the work of sight conservation is another program of equal importance in education, industry, and society, the prevention of hearing-handicaps and the special education of those who suffer from defective hearing.

Teachers have an important part to play in the con-

servation of sight and hearing. Educational efforts are greatly handicapped by defects in either of these special senses. Society may in turn feel the burden of these handicaps if teachers fail in performing their duty to promote better sight and hearing and to conserve those where necessary.

Some Questions for Consideration

1. What is the difference between seeing clearly and seeing easily? What is the significance of this difference to teachers in carrying on a sight conservation program?

2. Rest relieves eyestrain. How may pupils' eyes be rested during school hours?

3. How does a hearing conservation program differ from a sight conservation program?

4. In what ways and to what purpose has science increased the range of our special senses?

5. What do you believe are going to be the educational advances of the future in regard to the special senses of sight and hearing?

6. What is the difference between hearing and listening?

7. Does your school have any organized program for the prevention and correction of defective sight and hearing?

8. Do you know of any more erroneous and harmful statement of the layman than that which lies in the four words, "He will outgrow it," when it applies to physical and mental defects? How can the school combat this all too common attitude on the part of many parents?

References for Further Reading

Conserving the Sight of School Children. National Education Association, 1201 16th St., Washington, D. C.

Program for Eyesight Conservation Day in Schools. Eyesight Conservation Council of America, Times Building, New York City.

The Eyesight of School Children (Bulletin Number 65). Bureau of Education, Department of the Interior, Washington, D. C.

Literature published by the American Federation of Organizations for the Hard of Hearing, Inc., 1601 35th Street, N. W., Washington, D. C.

CHAPTER X

“HEADS UP!”

Present-day attitude toward posture. The American Posture League has done much to center the attention of teachers, parents, and business interests upon the importance of correct posture in relation to health, efficiency, and appearance. The League has had the sympathetic and active coöperation of physical educators, physicians, orthopedic surgeons, and others. Business has also given its support.

Due to the enthusiastic interest in posture, the term has of late become almost a household word. Some magic seems to reside in the word itself. In nearly every magazine one sees some attempt of commercial interests to use the term to advantage. Makers of mattresses explain in their advertisements how their product conduces to the preservation or creation of correct posture. So, too, do manufacturers of chairs and desks for school and office use. Distributors of wearing apparel insist that their products are fashioned upon the principles that underlie approved standards of correct posture. The shoe merchant claims that his footwear conforms to the true principles of orthopedics. Even directors of the schools of dramatic expression make the point that training for the stage can improve one's posture.

In all these contentions—some of them, of course, without foundation—an appeal has been made to the present-day popular interest in good posture. However, despite all of the popular and scientific literature placed before the public, much still remains to be done in making practical application of the principles upon which the attain-

ment of good posture properly rests. As yet the general public knows posture better by name than by sight or by feeling.

An analysis of good posture. No definite standard can be set up as exemplifying the full meaning of the term "good posture." The body assumes all sorts of positions, one at one moment, another at another moment; trying to standardize them all is a hopeless task. Standards must be of two kinds: (1) Those which people use in judging others; (2) those which they use in judging themselves.

The triple posture test, which will be discussed later, is useful for judging others. For self-testing, the only practical standard is that which is measured in terms of feeling. In other words, the individual who has been given the "feel" of good posture has an ideal which he may or may not try to live up to. In either case, however, he is conscious of his position and he judges the correctness of his posture accordingly. Dr. Armin Klein, director of the posture clinic of the Massachusetts General Hospital, regards posture as being good "when the disposition of several parts of the body is that best adapted to its design and use, and when that disposition is conducive to health and happiness."

Posture that is not helpful to the task in hand is not good posture. Posture that does not help in economizing the expenditure of energy and in favoring the general organic functions of the body cannot be called good posture unless the body's need of rest overshadows for a short time its need of a normal adjustment of body. There are times, for example, when it is very restful to slump into an easy chair and take a position which is far from correct, anatomically considered, but which, for a brief time, is restful. Such a position is, therefore, good

posture for the moment. If this position becomes habitual, it is of course a poor postural position.

The test of good posture, therefore, is its effect upon the body. If it rests the body without exacting the penalty of an undesirable postural habit, well and good. If, on the contrary, it rests the body, but reduces the efficiency of the body's performance, or becomes habitual and so interferes with the normal physiological activities of the body, then we must consider it poor posture.

The value of correct posture. The words of Milton in which he says, "Nature has done her best: do thou thine," are, in effect, an injunction to all of us to raise our heads, literally as well as figuratively, as high as possible. Thus we may the better survey our environment.

The first step in doing our best is to look about us. The first sign of returning vitality in the sick is the power to raise the head from the pillow. The fallen gladiator raises his head as a first move in his struggle to get back into the conflict. "Heads Up" is much more than an expression; it is associated with strength, ambition, and victory.

There are five distinct reasons why good posture is important. These reasons are, psychological, physiological, economic, esthetic, and athletic, respectively. The psychological value of good posture has been appreciated only of late. Good posture reacts upon the mind much as do good clothes. And the mind, in turn, affects the posture. Success makes for good posture; failure is associated with poor posture, especially of the head and shoulders. The buoyant spirit of youth and of manhood is shown by good posture.

Physiologically, good posture is very important. The public is fairly well acquainted with the hygienic value of good posture, but unfortunately most of our attention to

bettering posture has been devoted to children. Youth is the time to train the body in correct habits of posture, but it is the adult who suffers from the harmful effects of poor posture. In youth the body makes its organic compensations fairly successfully, no matter whether the posture be good or poor. In middle age, trouble looms, for the body cannot indefinitely continue to make needed adjustments. The time for making them is early in life.

Good posture is an asset in the business world. It helps the candidate for a position to secure employment. Later, it helps him to keep at his work without being unduly fatigued. Good posture lends grace, poise, and dignity to one's bearing. On needed occasions it even suggests strength.

The esthetic values of good posture scarcely require mention, so well are they known. In this athletic age, men and women find that good posture has as much to do with making a good appearance as have good clothes. The increasing interest in sports now held by men and women of all ages makes it more necessary than ever before for people to carry themselves well merely for the sake of good appearance. The characteristic lines of modern sport clothes, which tend altogether towards the athletic type in cut and fit, require that one have good posture for the sake of appearance even if not for that of performance.

Not all athletes sit, stand, and walk well. But when taking part in competitions, all successful athletes do have good posture, that is, good "form," as the coach calls it.

The significance of poor posture. Speaking generally, poor posture is more important as a sign that something needs correction than as a condition. Frequently, poor posture is the result of, rather than the cause of physical weakness, illness, and disease. It is for the most part

secondary to some condition of which it is but a reflection.

Normally we should aim to correct poor posture. If, however, it is due to some organic condition, for example, Pott's disease (tuberculosis of the spine), then the physical defect should not be disturbed. We should then go one step further and seek to correct the condition that causes the poor posture. Poor posture may be due to habit, weakness, fatigue, occupation, or any one of a number of other causes, but unless the cause is discovered in each case our efforts to train the pupil in good posture may prove discouragingly futile.

Posture training is, therefore, much more than a matter of drilling the pupil in correct carriage. Too many teachers think of posture training as a more or less exclusive phase of physical education, and so fail to recognize the greater importance of emphasizing posture in writing, drawing, art work, and manual training. Such teachers forget that the very nature of the physical education program favors training and practice in posture.

Like breaches of simple ethics, cleanliness, and discipline, incorrect posture ought to be called to the attention of pupils. Indeed, classroom discipline not infrequently depends to some degree upon the maintenance of correct posture. Pupils who are not held to reasonable standards of good posture naturally become careless, inattentive, restless, and even troublesome. The wise teacher realizes this, and from time to time gives her pupils opportunity to stand, walk about, stretch the muscles, and tone up the body by means of exercise and fresh air.

Posture training. Two important principles should be kept in mind when teaching the proper erect posture. These are: (1) The rotation of the pelvis backward; (2) the drawing of the head backward. It is important to rotate the pelvis backward, using the hips as the axis, so that

the lower part of the back will not have the exaggerated curve frequently seen. To rotate the pelvis backward, the abdominal muscles have to be retracted and the waist flattened; at the same time the buttock muscles should be retracted. The net result of this contraction of muscles is the flattening of the abdomen and the lower back.

The head should also be drawn back, with the chin in, the head being balanced above the shoulders and above hips and ankles as well. In this position the flexor and extensor muscles that maintain balance in the erect position also balance the pull of each other at the same time, so that there is a minimum of muscular strain in keeping the body erect against the pull of gravity.

In the sitting position, the axis of the trunk should form a right angle with the axis of the thigh. Also, the axis of the lower leg should form a right angle with the axis of the foot. Thus, foot, lower leg, thigh, and trunk axes have the positions of treads and risers in two stair steps. The teacher can determine whether or not pupils' seats are suitable for them if she will note the position of the body's parts mentioned above. And the teacher should keep in mind that seats ill-suited to pupils affect not only the pupils' posture; uncomfortable seats make children restless.

It has been said that "posture is a three-storied affair—head, spine, and feet." Unfortunately it often happens that teachers think of posture as a matter of only the head and the spine. They forget the importance of a correct foot position in standing as well as in walking.

The old notion that children should stand with the feet in the position of a clock's hands when the time is ten minutes before two has been discarded. Some say that the feet should be practically parallel; others recommend that they should form an angle of about forty-five

degrees; that is, they should take the position occupied by the hands of a clock when the time is five minutes before one.

Teachers should not forget that many disabilities of middle life which are commonly attributed to poor posture are really due merely to poor abdominal posture. So far as concerns correct posture, the waist muscles of the human body are very important. The position, "waist flat," ought to be stressed quite as much as "chest high" in giving directions for assuming a proper posture.

Training in posture habits. Many factors enter into the formation of habits of good posture; no one standard can be recommended as meeting all requirements. As Lillian C. Drew points out in her excellent book, *Individual Gymnastics*, what is needed is the formation of habits of good posture rather than the habit of good posture. It is important that individuals remember this so that they may be mindful of their posture when working, resting, walking, riding, or when engaged in any other activity.

Although training in correct posture may require the use of many devices in the way of suggestions and exercises, it should rarely necessitate the use of braces of any kind. There are many conditions, to be sure, and most of them medical or surgical cases, that make necessary the use of some sort of brace or other mechanical contrivance, at least for a time. But, generally speaking, the majority of persons who have poor posture do not need braces at all. If posture is to be corrected and to remain so, it must be achieved through muscular effort, and not by means of braces that weaken muscles upon which falls responsibility for correct posture. All in all, where posture is concerned, mental and muscular braces are the only kinds that ought to be used.

SOME SUGGESTED METHODS

Posturegrams

Good posture begins in the head and ends in the habit.

Stand like six o'clock and sit like three.

Put your spine in proper line.

"Heads Up"—if you are looking for good posture.

Some Blackboard Devices

1. **The pronunciation of posture.** Explain that there are two ways of pronouncing *posture*. The word may be pronounced with the tongue and with the trunk. Some, using trunk as well as tongue, pronounce the word correctly *pos-ture*. Many pronounce it with their trunk as *post-ure*. The latter may sound all right, but it never looks right. It is stiff, like a *post*. No posture should be post-like; it should be erect, but flexible, never rigid.

2. **The good posture letters in the alphabet.** Ask pupils to select the capital letters of the alphabet that teach a lesson in correct posture. Write the selected letters on the blackboard. The following may be used:

The letter I shows the proper way to stand. It is a bit too straight, but it is better to err on the side of straightness than to look like the letter S.

The letter L shows the proper way to sit. This sitting position is much better than that shown by the letters C or G.

The letter T shows a good gymnastic position—arms extended at the side.

The letter V shows how the feet should be placed in the standing position—that is, at an acute angle approaching the parallel.

The letter X also shows a good gymnastic position—feet spread and arms spread overhead.

The letter Y shows a good postural exercise because it indicates that the trunk is stretched upward.

3. **Teaching posture with a watch.** Draw three watches on the board (See Figure 38.) leaving out the hands. Ask the class what time on the watch represents good standing posture. After the pupils have suggested different times, place the hands as shown in (a). In like manner, ask the class what time represents good sitting posture, and good sleeping posture. See (b) and (c). Other types of good posture can be shown, for example, diving



Figure 38. Teaching Posture with a Watch

posture—five minutes after six. Make the point, finally, *that all time is good posture time*—morning, noon, and night, whether one is at study, play, or at rest.

Posture Week

The idea of the Posture Drive is not new. It has been successfully used by many schools to stimulate interest in good posture and to maintain the interest so developed. The well-known methods of the drive, as applied in health drives, civic cleanliness drives, financial campaigns, and other community enterprises are merely adapted to the special problems of a good posture campaign. The following suggestions may prove helpful to

teachers in organizing a Posture Week as part of a Posture Drive.

Purpose. Posture Week is a period devoted to making a drive for the improvement of posture.

Preliminaries. Interest pupils in good posture by discussing with them the posture of human figures depicted in masterpieces of art, both painting and sculpture. Suitable pictures may be clipped from periodicals or obtained from other sources.

Pictures may be purchased from publishers named in the references at the end of the chapter. If pictures are purchased, it is a good plan to buy one large print for display and enough smaller prints of the same subject to supply each pupil in the class with a copy. The small prints are very cheap.

Suitable prints for the purpose are the following: "The Winged Victory of Samothrace"; Vandyke's portrait of William II, Prince of Nassau; Richter's "Queen Louise"; the Plymouth statue of the Indian chief Massasoit; any good statue of the old Roman god Mercury; a picture of some one of the numerous statues entitled "Washington on Horseback"; "Song of the Lark."

First day. Explain the *Triple Posture Test* (described fully on page 162) so that pupils will know how to take the test when it is later given. It should be administered on the last day of Posture Week. Those who pass it may then become eligible for charter membership in the school's posture league. When the test is first given, do not announce the names of pupils having either good posture or poor. Have pupils make posture slogans similar to those on page 156.

Second day. Today place emphasis on *walking posture*. Select the five pupils who carry their bodies best and who most nearly point their feet in the proper direction when

walking. Test the pupils in marching. Make a point of testing them when they are "off guard" as to proper marching posture. Have a walking race. Have a race in which racers carry a book balanced on top of the head. Discuss the proper way to carry books, parcels, and other heavy objects so as not to form the habit of faulty posture. Write on the blackboard the *Ode to Posture* published by the American Posture League.*

Third day. Today place emphasis on *sitting posture*. Select the five pupils who maintain the best general posture when writing, drawing, and studying. Have the pupils prepare posture posters and write essays on topics related to good posture. The different classes may display their posters to one another.

Fourth day. Today place emphasis on *working posture*. Select the five pupils who maintain the best general posture while working; for example, while doing manual training, cooking, or sewing. If the school has garden activities, the pupil's posture while at that work may be used as a test. If none of the activities mentioned above are carried on in your school, then a test of *athletic posture* makes a good substitute. Test pupils in athletic form. Children may be asked to make good posture book marks as part of today's activities. Clay modeling showing figures having good posture is also a suitable exercise for the day.

Fifth day. Today place emphasis on *all-round posture*. Test pupils with Bancroft's *Triple Posture Test* (See page 162) and then name those who are to be honored by

*The American Posture League, 1 Madison Avenue, New York City, can supply wall charts, lantern slides, reprints, and much other valuable material that will be of help in keeping constantly before pupils the importance of good posture. Teachers should write to the League for a catalogue of materials available.

membership in the school's league. Write the names of charter members in an album made for the purpose. Add snapshots of the members if those can be obtained. Make the posture test part of an afternoon program on posture, to which parents are invited. Present a posture play (which may be obtained from the American Posture League). Judge the slogans, essays, posters, and clay modeling that have been done by pupils during the week. Announce the winners at the close of the program. Have the school doctor or school nurse (or any other doctor or nurse) give a talk on good posture.

Follow-up activities. Have monthly posture tests. Present good posture pins distributed by the American Posture League. Hold an occasional "Good Posture Tag Day" on which attention is called to pupils who have good posture. Practice setting-up exercises and games so that pupils will not be so likely to form habits of poor posture because of classroom fatigue and restricted muscular activity. Use special posters*; for example, those on the prevention of orthopedic defects.

Lesson Outline: The March of Life

"In the march of life, don't heed the order of 'right about' when you know that you are about right."—Oliver Wendell Holmes.

- I. A discussion of parades.
 - a. Historical parades and marches.
 - b. Parades that the pupils have witnessed.
 - c. Parades that the pupils have been in.
- II. Lessons to be learned from parades.
 - a. Some of the marchers were out of step. It is much like this in the march of life. Some people

*These and much other valuable material may be obtained from the National Child Welfare Association, 70 Fifth Avenue, New York City, and also from the American Posture League mentioned in the footnote on page 159.

are out of step with the whole world; they fail to keep in step with the laws of the community. Most people can get into step if they are shown how, but some seem unable ever to get into step no matter how often they are shown. It is they who fill the prisons. Morally and socially, these people have the left foot on the right leg, and vice versa.

- b. Some marchers tire easily. Everyone starts out with good posture, but many lose it in a short time. They march well while the music is playing and the spectators are cheering. When the route leads up hill and the excitement is over, they begin to drop out, one by one. Good marchers keep up the same even pace, regardless of encouraging music or discouraging distances.
- c. Some drop out because of sore feet. Others drop out because of "cold feet"; they are the quitters in life.
- d. Some marchers keep their lines straight, as well as their bodies and their deeds. They turn square corners. They are square in living as well as in marching.

III. Some things to think about.

- a. Posture should be watched. One carries the load more easily when it is well balanced. One's bearing in life is very important. It is equally important not to be overbearing. In life, the reviewing stand is not always on the right side of the line of march. It may be anywhere; it is often in some unexpected place. Good marchers are always ready to be reviewed.
- b. Keep in line with the other three in your "four" as you march. The "four" are you, your conscience, your soul, and your mind. The best way to march is "four abreast."

Young man, mark time no longer;
Age will find you no stronger.

Take up the march with undying will,
Push onward, ever onward, up Life's Hill.
Hold your head high—keep your hopes alive,
Get in step with the right—you're bound to arrive.
Success be thy aim.
Do your best—that's the game.

Posture Tests

Two good tests for posture now in common use are the *Vertical Line Test* and the *Triple Posture Test*, both of which were developed by Jessie H. Bancroft. She describes them fully in her excellent book, *The Posture of School Children*.

The *Vertical Line Test* is made by holding a window pole (or other straight pole about eight feet long) in a vertical position beside the pupil so that the front part of the ear and the forward part of the foot (at about the ball of the foot) are in line with (that is, touch) the pole. The axis of the head and neck, of the trunk, and of the thigh and lower leg should then be parallel with the pole. If the pupil's posture is poor, the three segments of the body mentioned will not be in a straight line but will form angles with one another.

In the *Triple Posture Test* the pupil is marked upon his standing posture, marching posture, and his posture while doing corrective exercises, including stretching exercises. Failure to maintain good posture in all three tests, which follow one another rapidly, causes the pupil to be marked low on the test. By comparing the same pupil's record from month to month, the teacher can tell whether or not improvement is being made. The teacher can determine the percentage of good posture among her pupils by comparing the number of those who take the test with the number who pass it. Class records may be com-

pared with one another in order to determine where most progress is being made.

SUMMARY

Examples of good posture are all about us. We see them in Nature, in art, and even in machinery, for the proper balancing of weight and force appears in the design of a machine.

Despite the common knowledge of the value of good posture, most people do not possess it. Further, most of the explanations offered in defense of existing conditions are inadequate. The situation may best be summed up, perhaps, by saying that poor posture is, with certain exceptions, purely a matter of habit. The exceptions are, of course, cases where poor posture results from physical defects.

Good posture adds much to the value of life if not to its length. It is a natural condition in a life of normal activity and environment, but neither of these obtains for the average adult, and therefore correct carriage of the body should be striven for. It represents the best possible mechanical adjustment of the body for the activity undertaken. Good posture is an asset to any individual; poor posture, on the contrary, can never be anything but a liability.

Some Questions for Consideration

1. What factors determine the posture of childhood, of maturity, of old age? Give reasons for your opinion.
2. Usually, practice is fully as important as precept. Do you believe that your posture is an important factor in influencing pupils in your class? Give reasons for your answer.
3. Do you consider good posture as the cause of health, or as the result of it?
4. Considering the spine and the foot, which do you believe to be the more important, posturally speaking, and why?

5. Do you believe that it is harmful to take a "comfortable position" when you wish to relax, provided you do not maintain the position long enough to make it a habit, or is there danger that the satisfaction your muscles feel in "letting down" will create a habit? Or is the right kind of posture always comfortable?

6. In teaching posture to the class, and in training the class in posture, do you keep in mind the fact that there may be some in the class or among the friends or relatives of your pupils who have poor posture as the result of accident or disease, and cannot change their carriage? Why is it important to differentiate between the types of poor posture that are due to habit or physical weakness and those that are due to disease?

7. A great deal is being written on "posture," and it is being emphasized in our schools as never before. Its importance has influenced the design of school furniture. What evidence can you point to that all this interest in posture is securing practical results; i. e., better carriage of the habitual type, and not merely that which is put on for occasions like a uniform?

References for Further Reading

- Bancroft, Jessie H., *The Posture of School Children*. (The Macmillan Company.)
- Bennett, E. E., *School Posture and Seating*. (Ginn and Company.)
- Drew, L. C., *Individual Gymnastics*. (Lea and Febiger Company.)
- Charts, literature and other materials published and supplied by the American Posture League, Inc., 1 Madison Avenue, New York City.
- Posters on the prevention of orthopedic defects, published by the National Child Welfare Association, Inc., 70 Fifth Avenue, New York City.
- Reproductions of photographs of paintings, sculpture, and other subjects may be obtained at little cost from the Perry Pictures Company, Malden, Mass.
- Literature published by the International Society for Crippled Children, Elyria, Ohio.

CHAPTER XI

MODERN SAMARITANS

The antiquity of first aid. The practice of first aid came into existence countless ages ago, for Nature was the original first aid worker. Slowly but certainly Nature developed defenses against sickness and injury, and these have been invaluable to man and the animals in protecting health and life. The coagulating power of the blood is one of Nature's most remarkable first aid measures. The coughing reflex is another example of Nature's protective provision against emergencies. The callus is Nature's first aid splint for fractured bones. The tear glands give first aid to the irritated eyeball. There are many other instances of Nature's instant healing measures when bodies are injured.

The thought that Nature is an experienced "first aider" should be reassuring to the student of first aid. It is encouraging to feel that, as one attempts to meet a situation in which life may hang in the balance, all the wonderful resourcefulness of Nature, the outgrowth of centuries of experience in rendering first aid to mankind, are coöperating in a spirited fashion. It is important that the student of first aid keep always before him the fact that he is not working alone. If he is terrified at the thought of his burden as he renders first aid while awaiting the arrival of the physician, he should recall that Nature is helping all the time.

The field of first aid. Under the direction of the American Red Cross, the practice of first aid has become highly organized and has reached a high degree of helpfulness. It has become world-wide in its scope. So great

has been the influence of the Red Cross upon the development of first aid principles and programs that the public nowadays usually associates the two.

There are no boundaries to the field of first aid; its scope is determined solely by existing conditions. The important factors are the patient, the ability of the first aid practitioner, and the availability of the physician. At times, the responsibility of the person rendering first aid is slight; at other times, it is great.

In general, the field of first aid includes the home, the school, the shop, the playground, sidewalks and streets. It includes recreation and play of every kind, all forms of travel, and the disasters of peace and war. Accidents come at most unexpected times and in most unusual places. In variety and unexpectedness, the problems which confront the first aid student, do not want for variety. An accident of any sort is always a challenge; always it must be faced bravely and calmly.

The first aid student. The first aid student needs to know how to coöperate with Nature in protecting the patient's life until the physician arrives. After that, the student gives such help as the physician may require.

In order to master the principles of first aid, the student must put his imagination to work alongside his determination. He must use uncommon sense. Only by thinking of his problem in terms of the patient will he be able to render intelligent, sympathetic service.

First steps in first aid. Five steps, all more or less common to all first aid cases, must be taken by the student if he is to succeed in any first aid enterprise. In order, these are: (1) View the situation and decide upon a plan of action; (2) save life; (3) protect patients from further injury; (4) relieve pain; (5) remove patients to suitable environment.

In deciding upon a plan of action, the first aid student must question the patient if possible, and bystanders if any are present. As much information as possible must be gathered; one must get the facts before one can act.

Always the saving of life is the first consideration. If the patient is bleeding badly, give first attention to that condition. If the patient has stopped breathing, as in the case of asphyxiation caused by drowning, smoke, gas, poisoning, electric shock, or the presence of a foreign body in the throat, artificial respiration must be administered at once. If the patient is in a state of shock, stimulation is necessary. In urgent cases like those mentioned above, the mechanical and chemical principles of first aid must receive attention before the bacteriological. A clean wound is of less immediate importance than a controlled hemorrhage.

The first aid student must care for the patient's injury so that it may not become more serious. A simple fracture, for example, may become a compound fracture unless the injury is protected. A wound with little infection may become badly infected through failure to cover it with the cleanest possible bandage. The student must guard against additional later trouble as well as apply first aid measures.

The patient should be made as comfortable as possible. Usually, the best position is the supine position, although there are exceptions to the rule. Cover the patient with a blanket or coat if he is cold or unconscious. Splints properly applied to broken bones tend to relieve the pain. Cold compresses relieve pain due to head injuries, sprains, and bruises; hot applications may also be used for that purpose. Injured parts should be kept quiet. So far as is possible, the patient should be kept in a state of both physical and mental comfort.

If the patient needs to be moved, great care must be used so as not to aggravate his condition. Someone should attend the patient, even though he is able to walk unattended. An injured person may be carried in a chair, on a shutter, or on the two-hand, three-hand, or four-hand seat. Great care must at all times be exercised or first aid may result in worst aid.

Accidents in the home. Accidents occasionally occur in the home, no matter how careful people are to avoid them. By exercising care their number can usually be reduced and their seriousness minimized. A knowledge of first aid methods helps to minimize the seriousness of household accidents, provided the home is equipped with a reasonable amount of remedies such as are included in any standard first aid outfit.

Among the commoner home accidents are falls due to wet, highly-polished, and slippery floors, to soapy bath tubs, to standing on rocking chairs and other unstable supports. Serious falls are often due to stepping on small rugs that lie unattached on polished floors. Results of these apparently simple accidents impress one that it is well to watch one's step at home as elsewhere.

Fire and firearms cause many serious accidents. So do sharp instruments of every kind. The careless use of tools by children, the careless use of can openers by adults, and carelessly disposed fragments of broken glass so commonly found on home grounds are all fruitful causes of accidents.

Failure to label poisons properly, and the careless disposition of poisons about the household and out buildings, result in many cases of severe poisoning and in many fatalities. Poisons chiefly responsible for these accidents include vermin exterminators, disinfectants, paints, cleaning mixtures, and mixtures used for agricultural and hor-

ticultural purposes, the latter chiefly arsenic compounds such as Paris green. Any of the substances mentioned may be used wrongly either through mistake or through ignorance, especially by children.

Both natural and artificial gas are responsible for many cases of asphyxiation and for many deaths. Gas may escape into the room from a burner after the flame has been extinguished by a gust of wind or by a liquid that has boiled over. Perforations in rubber gas tubing, poor plumbing, and periods of low pressure during which the flow of gas is insufficient to sustain a flame are also often responsible for the escape of gas into living quarters. Running an automobile engine in a closed garage may result in carbon monoxide poisoning.

Many serious and fatal accidents are these days caused by electricity. In every household some one should make sure that electrical apparatus of every kind is in good working condition and that there is no defective wiring that may cause accidents.

The home medicine closet. Every home should have a medicine closet that contains all necessary first aid remedies. This closet should be locked, and the key should be kept out of reach of small children. As a further precaution, less dangerous but equally effective drugs ought to be substituted for very poisonous drugs such as carbolic acid and bichloride of mercury.

A well-equipped medicine closet should include the following, or articles that may be substituted for them: *Aromatic spirits of ammonia* (a 2-ounce bottle having a glass stopper), for use as a stimulant; *tincture of iodine* (a 2-ounce bottle containing a solution half iodine and half alcohol), for preventing the infection of wounds; *mercurochrome* (a 1-ounce bottle), a substitute for iodine, for preventing the infection of wounds; *mercurochrome*

does not irritate when applied to open tissue; *bicarbonate of soda* (baking soda), for internal use as a relief from indigestion, and for external application in the form of a water paste or solution in case of burns; *Epsom salts*, for internal use as a cathartic, and for use externally in solution on compresses for sprains and bruises; it is also valuable as an antidote in case of carbolic acid poisoning; *castor oil* (or some one of the many substitutes now available), for use as a cathartic; *aspirin* (tablets), for headache; *syrup of ginger*, for cramps; *syrup of ipecac*, for use as an emetic, especially as an antidote in certain cases of poisoning; *oil of cloves*, for toothache; *boric acid* (in a saturated solution), for use as an eye wash; *powdered burnt alum*, for local application to ulcers of the mouth and as an astringent in cases of nosebleed; *powdered mustard*, for making mustard plasters to be used as a counter-irritant in cases of local pains, and also for making a footbath; *medicated alcohol*, for sterilizing; *carbolated ointment*, for burns and itching; *tweezers* (having sharp points), for removing splinters; *absorbent cotton*; *scissors*; *toothpicks*; *medicine dropper* (having a curved point); *clinical thermometer*, for taking temperatures; *picric acid gauze*, for burns; *adhesive tape*, a roll; *gauze bandages* (1½-inch).

Home care of the sick. A sick child should always be immediately isolated from other members of the family, and especially from other children. Unless this is done at the outset of the illness, even before the doctor has diagnosed the ailment, it may prove to be too late to be effective in protecting others from the disease.

In general, children who suffer from a fever of any kind, from skin or mouth eruptions, from sharp pains in the head, throat, chest, or abdomen, should be isolated, put to bed immediately, and attended by a competent physi-

cian unless the condition mends within a few hours. This treatment should also be followed when children suffer from a distressing cough, from discharging eyes or ears, from vomiting, convulsions, or what seems paralysis.

Those who have the charge of children should always bear in mind that no one can judge from the severity of an ailment in any one case how that ailment will affect another person. This fact alone should discourage the ridiculous practice of exposing children to people affected with a communicable disease in order that the well child may contract the disease and so "be through with it." This is a practice that cannot be too severely disapproved.

One who has the care of an ill person should be extremely attentive to her personal hygiene at all times, and especially while awaiting the arrival of a physician. She should wash her hands thoroughly every time she leaves the sick room, and so far as possible she should avoid intimate contact with those who are well.

Table utensils used by a person who has a communicable disease should be washed apart from those used by others, and dried with a separate cloth. In cases of communicable disease, all wastes should be treated with a powerful disinfectant before they are disposed of. Soiled personal and bed linens used by the patient should be laundered separately and always boiled in strong soap-suds. The sickroom should be kept well ventilated; it should have lots of sunshine, and so far as possible, quiet should be maintained.

Following the termination of a case of contagious disease, the room that has been occupied by the patient should receive a thorough cleansing. Floor, woodwork, and furniture should be washed, the room should be thoroughly ventilated for several hours, and as much sunshine as possible should be allowed to enter it. Rugs, furnish-

ings and bedding should be cleaned and aired out of doors. Linens should be washed in boiling soapsuds. A reasonable period of time should elapse before the room is again occupied. It should be borne in mind that experts in sanitation nowadays regard fumigation of any kind as a procedure of doubtful value.

The patient who has just recovered from a contagious disease should receive a thorough cleansing bath, a shampoo, and a supply of fresh, clean linen before associating with well people. Where laboratory facilities are available, it is well to have the patient undergo such tests as will show whether or not he has fully recovered from the ailment before he returns to society.

The first aid problems of the school. The emergencies most likely to occur in or about the school result chiefly from falls and bruises incidental to seasonal sports. These include baseball accidents; mishaps incident to throwing snowballs and other missiles; falls from playground apparatus; injuries caused by running in front of swings or by being knocked down as the result of rough play; falls on steps; injuries caused by falling against desks while romping in the aisles; and injuries caused by panic that arises during fire drills. Accidents due to playing in streets about the school building must also be considered.

As one step for remedying all these conditions, the teacher should try to effect an organization that will prevent the more serious accidents, and reduce the others in number to the point where they constitute a reasonable hazard of play. Some form of the Junior Safety Council is recommended as the best solution of the problems of school accidents. (See Chapter XII.)

It is important that the teacher should also be prepared to render proper aid in cases of fainting, epilepsy (fits), toothache, and sick stomach. There should be a first aid

cabinet in the school. The telephone number of the school physician and of one or two other capable doctors readily accessible should be listed. A divan and a blanket should be in the school for the use of anyone who needs to lie down during a slight indisposition.

First aid in public places. Most of the emergencies that arise on the street are due to automobile accidents, apoplexy, convulsions, and fainting. Fortunately there is usually a convenient automobile for taking the patient to a hospital, if it is necessary to do that. The near-by drug store is also usually a good place in which to seek help. For treating cases that result from these four emergencies, the first aid student should be familiar with the tourniquet and its uses, with artificial respiration, and with the use of aromatic spirits of ammonia. He should have a knowledge of the effect of position upon the circulation of the blood, and he should be acquainted with other principles that are useful in the event of emergencies.

First aid to animals. Most people instinctively desire to help suffering animals. This is especially true of children, who make animals their pets and their friends. It is important that children be warned to use care when trying to render first aid to animals. Animals often mistake attempted aid for further injury, and when they do so they are likely to scratch or bite their benefactor. It is always possible that a sick or seemingly injured animal is afflicted with rabies. Children should be taught to call for help when they discover an animal that needs attention, and not to attempt to give first aid themselves.

SOME SUGGESTED METHODS

First Aid Slogans

It's always easy to find an accident in the dark.
First aid means *Ask—Investigate—Do*.

Ignorant first aid may be worst aid.

A fracture should be handled like a piece of fine china.

Some Blackboard Devices

1. **The first aider's alphabet.** The following blackboard device is an excellent review in first-aid methods, principles, and devices. It may be used from time to time with a corresponding increase of effectiveness each time.

Assign a letter of the alphabet to each of twenty-six children, who then go to the blackboard. Each child prints in large size the letter that has been assigned to him, and beneath it writes as many different items having to do with first aid as he can write. The following are suggestive.

- | | |
|---|---|
| A—Aromatics | I—Infections |
| Action | Ivy poisoning |
| Artificial respiration | Inflammation |
| B—Bandage | J—Judgment |
| Bleeding: Stop | K—Keep at it |
| Breathing: Observe | Kill germs with iodine |
| C—Carefulness | L—Leadership |
| Calmness | M—Maintain body heat |
| Cleanliness: Hands and wounds | Medicines: Simple remedies only |
| D—Doctor: Call if necessary | N—Nosebleed |
| Damp clothing: Remove as soon as possible | Nausea |
| E—Encourage patient | Notice: Patient's color, breathing, temperature |
| Examine patient | O—Open windows for fainting case, suffocation from smoke, gas |
| Elevate bleeding parts | P—Place patient in comfortable position |
| F—Fractures: Handle carefully | Q—Quickness |
| Fast work needed | Quietness |
| G—Get help if necessary | R—Rest the injured part |
| Germs: Keep out of the wound | Remain with the injured |
| H—Head: Use it | Reach help quickly. |
| Hands: Lend them | |

S—Splints	W—White of egg: Antidote
Sprain	for poisons
Stimulants	Wounds: Management
Shock	of them
Sunstroke	X—Make no mistakes that
T—Tourniquet	must be crossed out
Transport	Y—You: You must act
U—Unfasten tight clothing	Z—Zero: The number of
V—Vomiting: Turn head to	mistakes you should make
one side	

2. **Burns.** Use white crayon to print the word BURNS on the blackboard. Write the numeral 1 above the letter R to signify a first-degree burn. Use red crayon to print EDDEN below the letter R, as shown to the left. The first-degree burn *reddens*. Write the

2	1	3
B	U	R N S
l	e	e
i	d	a
s	d	r
t	e	
e	n	
r		

numeral 2 above the letter B to signify a second-degree burn. Use yellow crayon to print LISTER below the letter B, as shown here. The second-degree burn *blisters*, and the blister fills with yellow serum, which is indicated by the yellow crayon. Write the numeral 3 above the letter S to indicate a third-degree burn. Use brown crayon to print the letters EAR below the S. The third-degree burn *sears*, that is, it chars the flesh, as the brown crayon indicates. When completed, the arrangement of letters resembles

that shown on this page, except, of course, for color.

3. **A lesson on fire.** Fire causes so many accidents that the teacher should take this opportunity to impress

pupils with certain facts regarding fire and its harmful results to people and things.

Fire is either man's friend or man's enemy. Discuss some of the safe ways to use fire, and make use of the device in Figure 39 to introduce the subject, explaining that the method used in the device is probably the safest way known to make fire. Take thirteen matches, and arrange them on the desk so as to spell FIRE. Have the pupils come one at a time and look at it.

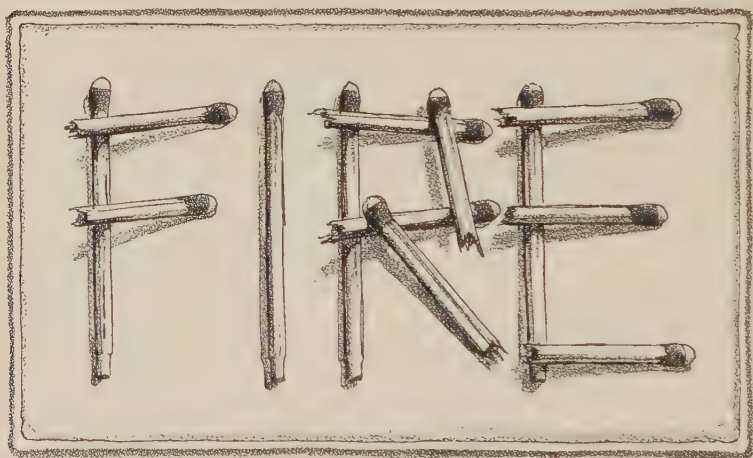


Figure 39. Man's Friend or Enemy

Use this device as an introduction to the consideration of some of the ways in which disastrous fires are started. Explain spontaneous combustion. Emphasize the importance of being sure lighted matches are "out" before they are thrown away. The danger of leaving matches lying around where small children can light them should be pointed out. Smoldering matches and cigarets are also the cause of costly fires. Defective chimneys, electric wires, and carelessness in the use of electric fixtures—electric irons especially—are also fire hazards. Careless-

ness, of course, is the greatest single factor in causing fire.

Explain how a "bucket brigade" is organized and how it functions. Let the children form a bucket brigade and pass along some schoolroom article (the waste basket).

Make clear that, to burn, a fire must breathe; that is, it must have air. Demonstrate the first aid device to be used with a person whose clothes are on fire. Explain that in smothering a fire that is in someone's clothing, one should begin the smothering process at the person's head so as to drive the flames away from the face and at once eliminate the possibility of inhaling flame.

Call attention to the fact that a paste made with water and bicarbonate of soda (baking soda) may be used to cover a burn which is not extensively blistered. An Epsom salt solution is good for bathing such burned areas; olive oil or any other oil is effective in keeping air from the burn. Severe burns should be treated like open wounds and need careful attention.

4. **Ivy poisoning.** The poison ivy, a vine having shiny leaves and yellowish-green berries, is commonly seen along the roadside. It is often confused with the Virginia creeper, or woodbine, a plant whose leaves grow in groups of five.

Ivy poisoning is caused by an irritating oil present in the plant. This oil sets up itching, blisters, and inflammation. Unless one is careful to remove the irritating substance in a proper manner, it will spread over untouched areas of skin and continue to cause painful irritation. In cases of ivy poisoning, the inflamed surface should first be washed with soapsuds. One should use a wash cloth and work from the outer edge of the inflamed area towards the center, thus preventing the spread of the oil that causes the inflammation. Alcohol may also be used to remove the oil. After the irritating oil has

been thoroughly cleansed from the affected parts, apply a soothing emollient such as vaseline, cold cream, zinc oxide ointment, or some similar preparation.

Children should be taught to recognize the poison ivy plant and to avoid it. By means of a blackboard drawing (Figure 40), shows how the leaves of the poison ivy are in groups of three. Use the following jingle for recalling the leaf arrangement of this plant:

Leaves—one, two, three
Poi—son i—vy



Figure 40.



Figure 41. Watch Your Step

5. Figure 41 shows four dangers common to those who fail to watch their step. These include accidents (1) to pedestrians, (2) to motorists, (3) to vehicle passengers, and (4) to canoeists. Discuss these accidents and make the point that everyone should watch his step (1) when stepping off the curb into the street, (2) when stepping on the gas control lever of an automobile, (3) when getting on or off moving cars, and (4) when entering and

leaving a canoe or other small boat. To be safe one must step cautiously, and use one's eyes, ears, and mind.

6. **Blisters.** Blistered feet are often regarded as an inseparable accompaniment of hiking. There is no reason why this should be the case, however, and blisters can usually be avoided if one wears shoes and stockings that fit properly. Aside from the fact that blisters are painful, and that they take away much of the joy that should come from hiking, there is always danger of infecting a blistered spot. On this account every blister should receive intelligent treatment as soon as possible.

In discussing blisters, which are accidents of such common occurrence, teachers should impress children with the importance of cleanliness in treating these and all other abrasions. Tell pupils about the work of Sir Joseph Lister, the distinguished English surgeon, who so much advanced the methods of modern surgical technique by pointing out the necessity for keeping wounds clean and for having absolute cleanliness of instruments, fingers, bandages, and everything else that comes in contact with a wound. Remind pupils that every blister should be treated in the Lister manner. Print the word BLISTER on the blackboard and underline the word LISTER which appears in it.

7. **Water problems of travelers.** Thirst, hunger, and fatigue present problems that every traveler has to meet. Of the three, thirst is usually first to make demands upon the body, for the human machine must be supplied with water if it is to keep going. Apart from the physical relief that comes with quenching the thirst, there are other important reasons why the body must be adequately supplied with safe drinking water. These reasons may be well brought out by using the device illustrated in Figure 42.

Use the letters of the word WATER to direct attention to the physiological values of water. Teachers should caution pupils to avoid drinking from rivers and from wells with which they are unacquainted. Even tap water is not to be regarded as safe unless the purity of the supply is safeguarded by bacteriologists and sanitary engineers, as in most large cities. These facts may be impressed on pupils by printing the word WATER on the blackboard and using it as an illustrative device. Underline

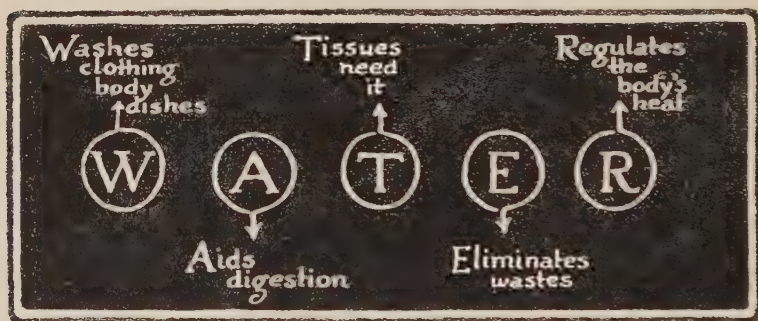


Figure 42. Water as an Aid to Health

the W and suggest that it stands for *well water*. Let the R stand for *river water*. Explain that these two kinds of water are satisfactory for the outside of the body. For the inside of the body—that is, for drinking purposes—one should use only *tap water*, represented by the T at the middle of the letters which spell WATER.

The teacher should explain that chemists use the symbol H_2O to represent water. Young people may be taught that this symbol may also represent the slogan—Health (to) Ourselves. Unless water is pure, it cannot be regarded as healthful.

8. The major problems in first aid. The following device is helpful either as a review or as an introduction

to first aid. Draw a large letter F on the blackboard, and below it a letter A. Ask the pupils what the letters suggest. They will doubtless reply, "first aid". Tell them that the letters do indeed suggest "first aid", as they have guessed, but that they suggest more than that to you. Then change the letters so that they resemble a tent with a Red Cross flag flying from the top. (See Figure 43.)

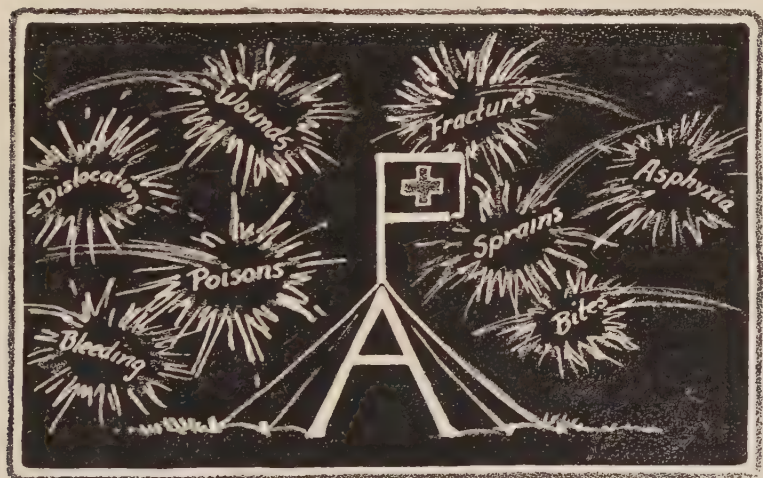


Figure 43. First Aid

Ask pupils to consider themselves Red Cross workers on the battlefield of humanity. Shells bursting all about them present first aid emergencies. These shells consist of shock, fractures, wounds, poisoning, bleeding, and similar emergencies. Have pupils suggest other emergencies that may require the service of a first aid worker.

Home Assignments

1. **A first aid scrapbook.** Have pupils clip newspaper accounts of accidents. If those are not available, have them write out accounts of accidents which they have

seen or of which they have heard. Do this work for two or three weeks, pasting each account into a scrapbook. Use a page to each account, and leave the lower half of each page blank. On the blank part of the page write the suitable first aid treatment for the accident described. Children may rely upon a first aid manual for information, or they may get information from their parents or friends. Discuss the accidents in class, and comment on the first aid treatments suggested.

2. **Suggestions for a home first aid cabinet.** Have pupils either alone or with help of their parents, make out a list of the first aid remedies for accident and sickness which they think ought to be in their homes. The teacher should discuss the lists with pupils and in a tactful way make general suggestions which interested pupils may take home if they so desire. This awakens an interest in first aid measures without an appearance of the teacher's making home affairs her business. Use these lists as the basis for discussion of first aid measures on vacation trips.

3. **Demonstrations of first aid.** The best way to teach first aid principles is to let pupils witness a demonstration of proper first aid technique, and then to give them plenty of opportunity to practice the technique they have seen. Boy Scouts, Girl Scouts, or members of other organizations that give instruction in first aid to their groups can be asked to make these demonstrations. If such persons are not available, then one can usually get a physician or a nurse to make them. If necessary, the school physical director can assist with this work.

The teacher can often interest a group of adults in forming a first aid class and securing a leader for the work. The teacher herself may act as leader if she has time to do so. Doing that will be good practice for her, and will also be a service to the community. At the con-

clusion of the lessons, those who have been enrolled in the course should take the first aid examination set by the American Red Cross.* This organization grants a certificate of accomplishment to those who do the work successfully.

SUMMARY

Present-day need for a knowledge of first aid is these days impressed upon the general public by means of newspaper and magazine articles. It is inculcated in industrial workers by the activities of a group of trained workers in nearly every great industrial plant. It is made a part of the training given to the Boy Scouts of America and to the Camp Fire Girls. A place for instruction in accident prevention and in the principles of first aid has been made on most education programs. The whole nation has been awakened to the importance of first aid in sickness and injury by the wonderful service which the American Red Cross has rendered in this country and in foreign lands on occasions of great disaster and national calamity.

To serve mankind in the hour of need is something that appeals to every normal person. The satisfaction that comes from realizing that one has given others relief from pain and danger repays for the time, effort, and thought the service requires. It is the duty of every teacher to inspire pupils with a desire to equip themselves so they may give first aid to others. She should also cause them to want to be prepared to render first aid to themselves in the event of an emergency.

Some Questions for Consideration

1. What is the difference between asepsis and antisepsis? What advantage does the aseptic treatment of wounds have

*Full information regarding this examination may be obtained by addressing the American National Red Cross, Washington, D. C.

over the antiseptic? Can the first aid student successfully follow the principles of asepsis? Give reasons for your answer.

2. In what ways can first aid be applied to the patient's mental condition? Explain fully.

3. What do you understand by the "case" method of teaching first aid? Give examples of a few typical cases that might be used.

4. Make a list of the things which you think ought to be provided for meeting the ordinary emergencies of school life.

5. The common pus infections usually involve either the fingers or the feet. Explain why this is so, and tell how you would render first aid in an effort to prevent infection of blisters and cuts on these parts.

6. First aid involves more than the initial handling of accidents; it is helpful in preventing the spread of communicable diseases, and in giving relief in case of sudden sickness. What are some of the common domestic emergencies in which a first aid student can be very helpful?

7. Common sense—when it is working—would tell anyone to be tactful in breaking the news of a serious accident to the injured person's folk. Unfortunately, common sense often runs away when excitement appears on the scene. What have you to say as to the method of informing parents of sudden illness or injury to their child?

8. Do you think that an epileptic child should attend school? What factors ought you to consider in fairness to the child as well as to his classmates? How would you treat an attack?

References for Further Reading

First Aid. General edition of the American Red Cross edition. Published by P. Blakiston's Son and Company, Philadelphia, Pa.

First Aid Instruction in Schools. American Red Cross, Washington, D. C.
The Safe Vacation. (Keep Well Series No. 5.) United States Public Health Service, Washington, D. C.

First Aid in the Home. Metropolitan Life Insurance Company, New York City.

The Official Handbook for Boys, published by the Boy Scouts of America, New York City.

Scouting for Girls, published by the Girl Scouts of America, New York City.

CHAPTER XII

WATCH YOUR STEP

The old order changeth. In the early days of man's history, life was protected blindly, instinctively, selfishly; today life is protected for reasons far more worthy than the mere desire to exist. We are learning that our lives are valuable to others as well as to ourselves if we take our proper places in organized society. There are times when lives must be sacrificed for the national life of our country. At times we are called upon to subordinate the desire for self-preservation; then, instead of saving our own life, we give it in service to humanity.

Today human life is more precious than ever before in the world's history. Yet at no time in the record of humanity have there been more illustrious examples of the spirit of him about whom the Saviour spoke when he said, "Greater love hath no man than this, that he lay down his life for his friend".

The instinct of self-preservation no longer motivates our lives to the exclusion of all other purposes. The world is valuing more and more the spirit of loyalty to something far bigger than the individual himself. Such a loyalty is patriotism. Other loyalties are love for one's fellowmen, chivalry, good citizenship, and spirituality. All these attitudes, and the emotions to which they give rise, constitute a sort of tribunal that watches over human nature and keeps it from swinging too far toward the side of self-preservation.

The day when these loyalties will motivate all men for the good of the group is still far off; men continue, either through ignorance, carelessness or recklessness, to harm

their fellows, even when they have no deliberate desire to do so. Among such people are those responsible for the preventable accidents which kill or maim thousands each year; in many cases, thoughtlessness alone must be blamed. If we can cut down this accident toll by impressing upon coming generations reasonable and thoughtful safety education, we add to the world's happiness.

Ours is commonly known as "the most careless nation on earth." This assertion is supported by statistics that show the accident death rate in the United States to be 76.3 per hundred thousand of population. This is more than twice the accident death rate of the United Kingdom. According to statistics, Denmark is the safest country in the world; its accident death rate is only 20.0 per hundred thousand people.

Safety first for children. The 1925 report of The National Safety Council says: "Total accidental fatalities to children under fifteen years of age, 20,700." The number of non-fatal accidents cannot be ascertained, but surely it is many times "twenty thousand, seven hundred." Aside from the pathetic aspect of accidents to children, especially of the fatal accidents, there is the very important aspect of the immediate cost to parents of the non-fatal accidents, and the equally important aspect of the after-cost of such accidents to society.

The report of the committee on education, one of eight sub-committees appointed to draft recommendations for presentation at the first National Conference on Street and Highway Safety, called by Secretary of Commerce Hoover in December, 1924, contained the following recommendations, which were adopted by the convention:

It is recommended that education in safety and accident prevention be incorporated into the curriculum of elementary schools by means such as the following:

a. As part of a general course in citizenship in which due regard is paid to the responsibilities and obligations involved in human relations. For this purpose, through some agency of research, there should be gathered together materials and accounts of practices in the teaching of safety for use in the preparation of such a program.

b. As subject matter of other courses in such fundamentals as arithmetic, geography, history, reading, nature study, and art.

c. Through education contests.

d. Through organized schoolboy patrols and junior safety councils.

e. Through the use of motion pictures and dramatization.

f. Through talks by local traffic police officers in uniform.

That safety education should be carried on into the secondary schools, and that the same habits and attitudes inculcated in the elementary schools should be in them extended into higher and more complex fields.

That safety education is no longer a subject which can be considered a fad, but that a systematic effort toward the training of the child mind in proper thoughts and habits for protection throughout life is absolutely essential.

The above report is typical of the attitude of educational leaders in the matter of safety and accident prevention. The National Safety Council, especially through its education division, is doing much toward awakening public interest in the reduction of accidents. At the Dallas meeting of the National Education Association, in 1927, a full section of the program was devoted to safety education. Current literature contains much material that deals in one way or another with the problem of safety. Even the public no longer looks upon a program of safety education in schools as "one more new thing" to take time away from the three R's.

Interest in safety education. Safety instruction in the school curriculum is finding its way into the regular classroom work through many channels. All of those are legiti-

mate; none of them interferes with the persistent efforts of curriculum makers to have a part in saving the child of today. Everyone seems now aware that the children, who are the men and women of tomorrow, must be saved from the serious accidents which operate to reduce the value of an educational investment, to the individual himself and to society.

Children enter into safety programs with much zest because accident prevention calls for alertness, knowledge, and judgment. The men on the police force have an active part in preventing accidents to others, and their deeds call forth admiration. Firemen, too, have their part in saving life. Newspapers give wide publicity to deeds of boys and girls who save others from danger.

Everyone wants to be a hero; the task of any safety education program is to get children to understand that it is courageous to shun danger as well as to avoid disease. The child should be taught to shun his playmate who toys with firearms, just as he is taught to avoid the playmate who wears the armband indicating whooping cough.

With younger children, emphasis should be on personal safety because they are hardly ready for that larger lesson in accident prevention which we expect their older brothers and sisters to learn and to practice. The latter may be summed up in the words, "I am my brother's keeper". This change in the child's point of view needs to be made gradually. It should come about while the child is learning to play with other children and to appreciate and to hold sacred their rights as well as his own.

The adult's safety creed. A hero considers the safety of others before giving thought to his own. No one can avoid the social responsibilities of maturity without at the same time losing two of the most precious things in life—self-respect and the respect of one's fellows. To be

really worth while either to himself or to society, the adult must learn to share safety for self with safety for others. For the adult, "Safety First" needs some qualification. Unless broadly interpreted, the law of self-preservation which directs so many of our actions will seek to influence us to listen to its whisper, "Save Me First".

The Carnegie Hero Fund Commission, established by Andrew Carnegie in 1904, keeps a record of deeds of courage. These are outstanding because they represent the truest form of heroism. They represent cases where individuals risk their lives for others when there is neither duty nor obligation to do so.

In 1923 the commission's files showed nearly eighteen hundred cases of men, women, and children who had won a badge of courage by risking or giving their lives for others who had no claim upon them. These accounts tell of remarkable deeds of courage in everyday life. The holders of these badges ignored personal safety and put in its place an ideal of service to humanity.

The world will be a better place in which to live, and earn, and give whenever it comes to contain more of the spirit of such heroes. The "hit and run" motorist has none of this spirit. The person who carelessly disregards others has no spark of heroism in him; nor has he who deserts his fellow man in the hour of need.

It is as much the teacher's work to hold aloft the torch of "Ideals First" as it is to point the way to "Safety First". The world needs both. Our opportunity as educators is to have a part in fusing these two; one, an idea; the other, an ideal. Out of these will come a nobler spirit of service to humanity in preventing accidents and in saving lives.

Sensible safety. No program of accident prevention will ever function to a one hundred per cent degree of perfec-

tion. Too many factors enter into it that cannot be humanly controlled. The chief goal should be the prevention of accidents that result seriously either to the individual or to society. Minor accidents sometimes do real good by teaching us to avoid serious accidents. There are times when chances must be taken; the point is, never to take them needlessly or heedlessly.

Safety rules in wide-awake schools. The modern school is a suitable laboratory for work in an accident prevention program. Situations fraught with danger constantly arise in classrooms, on stairways, and on the playground. Those situations must be met; they are met by teachers at times, by janitors at other times, and on many occasions by pupils themselves. If teachers have been conscientious about their responsibilities, and if they have given suitable instructions about meeting emergencies, pupils can practically apply those instructions at first hand when emergency situations arise.

Pupils must be taught to play games not only with an eye to possible victory but with an eye to dangers that may occur when rules are disobeyed. Stairways must be forbidden territory for play, for fooling, and for running races. Playground equipment must be used properly and with care; those who fail to do so may suffer serious accident. Balls and snowballs should be thrown only in games at playtime, and then never at the heads of others. The fire-drill should always be a matter of the greatest seriousness; it should never be made an occasion for exercise, for play, or for obtaining fresh air. During the fire-drill, order should be the first rule. Street play should be permitted only in streets closed to traffic.

Regulations like the above should be familiar to every pupil. If pupils can be interested in drawing up their own safety rules and in subscribing to them earnestly and

wholeheartedly, so much the better. Finally, the organization of a junior safety council as a branch of The National Safety Council is the best solution of the school's safety problem.

Street safety. For everyone the street hazard increases yearly. According to dependable figures, automobiles caused 21,627 deaths in the United States in 1925. The National Safety Council reports the deaths of 7,000 children killed by automobiles during that year.

Of every 923 automobiles that pass on the highway, one is a "killer". Figuratively, one of them will have the blood of a child or of an adult on its wheels or bumper. The driver of the car may be quite innocent, for many accidents are due to the fault of the injured. But no driver's pleasure in riding can ever again be quite so great, if his car has caused a death.

These days much is said about "jay walking". That is a dangerous practice. But "jay running" causes as many accidents, if not more. The driver can usually avoid the "jay walker"; his movements are usually slow. But the child who dodges into the path of a moving car, who races into the street to recover a ball or to escape from a playmate, presents a situation which even the most skillful driver may not meet successfully.

Safety in play and recreation. Hunting, boating, coasting, swimming, skating, climbing, and giving "dares", impersonating Indians, cowboys, and bandits, and playing at mock warfare provide situations for the majority of the serious accidents in play and recreation. Parents, teachers, play-leaders and newspapers, the forces that influence children, can do much toward making play safe. "Eternal vigilance is the price of safety"; two are often needed to attend to the safety of one—one to warn, the other to give heed to the warning.

SOME SUGGESTED METHODS

Safetygrams

"The curbstone is the danger line."

Don't trust to luck; it may pass you the buck.

I practice safety to save thee and to save me.

"Think before you act, and keep thinking while you act."

"Early and provident fear is the mother of safety."—Burke.

Special Talks on Safety

An effective way to stimulate interest in safety is to have a uniformed policeman or fireman give a talk to the pupils. The police and fire departments are often willing to assign an officer to visit schools and give such talks. If he can illustrate his talk with blackboard drawings, the effectiveness of his words is increased. In such a talk, the main topics should deal with the danger of playing in streets and with the danger of crossing streets without looking first to the left and then to the right.

An excellent method of impressing pupils with the importance of organizing for the prevention of accidents is to have a telegram that calls attention to the need of practising safety first habits delivered to the classroom. The teacher may send the telegram to herself. The message should contain some such advice as this: "All aboard for the Safety Game. Read the pledge and sign your name." Another good plan is to have a letter bearing a safety message sent to the class.

A Device: The Cost of Taking Chances

As shown by Figure 44, this device resembles the well-known spinner toy. Draw a 5-inch circle at the center of a sheet of stiff cardboard about 15 inches square. Divide the circle into six equal parts. At its center mount an arrow cut from cardboard and so arranged that it spins on a pivot (a paper fastener).

Number the six sections of the circle. At the circumference opposite each, mount a picture clipped from a magazine. These pictures may illustrate the following or other careless habits: (1) Playing in the street; (2) playing with fire; (3) taking medicine in the dark; (4) catching on to moving vehicles; (5) seeing whether or not a firearm is loaded; and (6) coasting across a street.

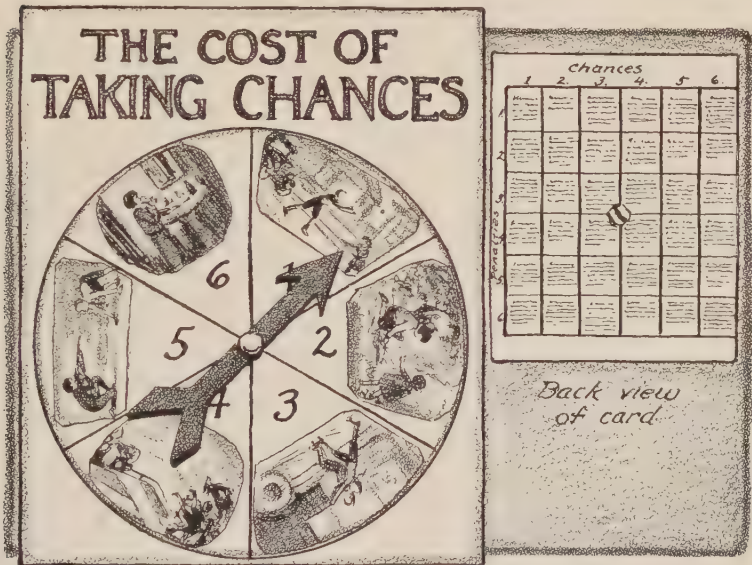


Figure 44. Taking a Chance on Safety

On the reverse of the card rule off six columns, one for each of the chances named above. Divide each column into six parts and assign to each part a penalty that may result from taking the chance mentioned at the head of the column.

Play may be begun by having the teacher explain that in this game, as in life itself, the cost of taking a chance is not the same to everyone. Sometimes the cost is small,

sometimes great. The teacher should explain the folly of taking chances, and give examples of people who took risks and suffered unfortunate results in consequence.

A pupil may then be asked to place the arrow on one of the six chances, for example, on No. 1 (Playing in the street). He then spins the arrow, which, let us suppose, stops on No. 4. On the reverse of the card the fourth penalty in the first column (that assigned to the chance, Playing in the street) may be, "Escaped from a speeding automobile but a small boy playing with me barely escaped with his life." This, then, would be the cost to the player who took a chance on playing in the street.

Each pupil may be given a chance to spin the arrow. Regardless of where the arrow stops, there is plenty of material for interesting and valuable discussion.

One weakness of most health and safety discussions is that teachers and others usually prophesy dreadful final results of carelessness that often do not happen at all. Not everyone who drinks coffee stops growing; not all who go to bed late have headaches; not all who get their feet wet suffer from pneumonia. But there is always the chance that some of these results may occur. This spinner game will impress children with the fact that taking a chance brings uncertain results and that we can never accurately estimate just what the result will be. We cannot tell what taking a chance will cost in suffering. The very uncertainty of taking the chance should make us cautious lest we have to pay more than some other person pays.

Blackboard Work

1. **Fire.** Call attention to the IRE in FIRE. Relate this to the expression "angry flames". Explain to the class that fires can often be prevented by following these practices:

1. Keep matches in metal containers and away from heat.

2. Do not give matches to children.

3. Clean stovepipes frequently.

4. Keep oily rags and mops in covered metal containers when not in use. Oily rags readily ignite by spontaneous combustion.

5. Do not carry lighted candles into closets.

6. Disconnect electric heating appliances (such as an electric iron) if called out of the room when using them.

7. Postpone the bonfire if the day is windy.

8. Locate the fire-alarm box nearest to your house and learn how to send in an alarm.

9. Explain that Fire Prevention Week, which comes in October, is a national institution and make clear that every school should give special attention to its significance and every child should do his part.

2. **Fire-making.** Discuss briefly how the ancients made their fires and how they kept them burning for years. Tell of their reverence for fire. Boy Scouts in the class should be asked to tell about the Indian's method of making fire. Make the point that although it is difficult to make fire without matches, nevertheless fire sometimes starts as if by magic. (See Figure 45.) Explain spontaneous combustion.)

Classroom Work

1. **A game: "Adventure."** A good way to review lessons in accident prevention is to tell the class a story of adventure in which the hero or heroine takes a number of "chances," some carelessly, others because he dislikes being laughed at by playmates, others because he goes to the aid of those in danger. The story should relate how the hero shows safety judgment, thus avoiding injury to himself and also preventing injury to others.

While the story is being read (or told), the class should follow the narrative. Whenever the hero shows safety judgment (in other words, "plays safe"), pupils should stand in the right aisle, turn round quickly, and take their seats. Whenever the hero shows poor safety judgment (in other words, "takes a chance" unnecessarily), pupils should hold their hands before their eyes (in horror). When the hero saves someone from an accident, pupils

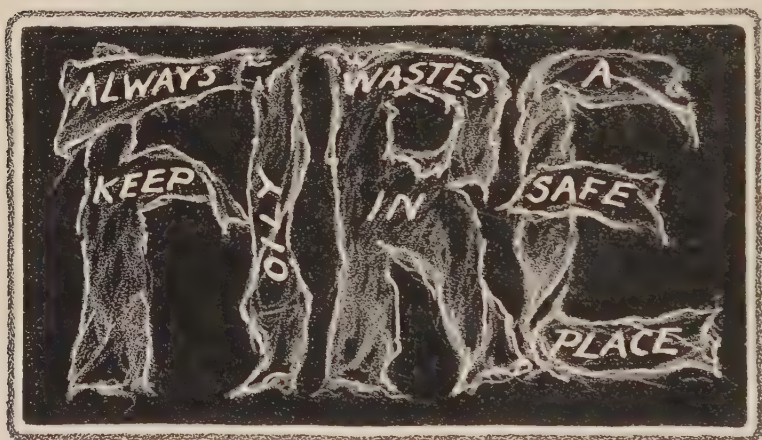


Figure 45. Spontaneous Combustion

should quickly stand and clap hands above their heads in applause.

The teacher should weave into her story situations that have already been discussed in class. Each time the game is played, the narrative should be changed so that pupils will have to follow the action closely in order to know what to do at the right moment. At the close of the game the teacher should indicate which row of pupils responded most quickly and quietly.

2. **Organizing for safety work.** A Junior Safety Council offers a first-rate opportunity for organizing the class

for definite work in accident prevention. Information regarding the organization of such a Junior Safety Council may be obtained from the office of the National Safety Council at 108 E. Ohio Street, Chicago, Illinois. Members must know the safety pledge, observe the safety code, and otherwise qualify for membership according to the regulations of the local council. The usual activities of junior safety councils include:

1. Acting as patrols at dangerous crossings and assisting children to cross the streets near the school in an orderly manner. (Children designated as patrols wear an armband or other insignia to show their official position. They are instructed to stay at the curb, not in the street, while performing their duties.)
2. Reporting violations of the council's safety code for which trial before the council may be ordered.
3. Patrolling stairways and playgrounds.
4. Assisting the principal in all matters pertaining to safety.

An important feature of the work of a junior safety council is the trial of pupils who have violated the school's safety code. Children should be made to realize that it does not constitute "tattling" to report a pupil who takes unsafe "chances." It warns the pupil and perhaps saves him from serious injury.

Assignments for Home Work

1. **A neighborhood safety survey.** Ask each pupil to make a survey of the neighborhood in which he lives, and list conditions that appear to be dangerous. Discuss the conditions in class without mentioning them specifically except in cases where they are a menace to public welfare.
2. **Collecting safety clippings.** Ask pupils to be on the watch for newspaper items on safety and accident preven-

tion. Discuss the clippings in class. Place the better ones on the safety bulletin board. Clippings collected by one class may be exchanged for those collected by others.

3. **English.** Write a composition on an assigned topic such as "Safety First on July Fourth."

SUMMARY

The public commonly believes that accident prevention is a new activity, necessary because of the speed of modern industrial life. This notion is only partly right; the safety idea is not new at all. A safety message appears in the Gospel of Mark (13:37): "And what I say unto you I say unto all, Watch." The Savior's message was undoubtedly an admonition to keep watch over one's spiritual safety rather than over one's physical welfare. Nevertheless, we of this day have need to keep watch over our physical safety and our social welfare as well as over our moral convictions and our spiritual life.

Automobiles cause the greatest number of accidents and fatalities. Industrial accidents are decreasing in number because of the campaigns being made by heads of manufacturing industries. Falls, drownings, burns, poisons, and asphyxiations take their toll. Even the homes of America are the scene of a distressingly large number of serious accidents. A line of the familiar song has even been revised: "There is no place like home—for accidents."

Everywhere there is evidence that people are now thoroughly awake to the necessity for emphasizing accident prevention. Not only on land but on the sea and in the air as well. Light-houses, buoys, and life-saving stations dot our coasts; other governmental regulations add to safety on the sea. Railroad travel is safeguarded by automatic signals and switching devices. Ordinances of cities and state laws aim at making travel safer, especially on

highways. Educators are finding a place in the curriculum for instruction in accident prevention. Public interests are spending vast sums of money to prevent people from being careless and to protect them from the carelessness of others.

The weak links in the chain of accident prevention are ignorance, carelessness, negligence, and undependable safety regulations and devices that fail when put to the test of use. One task of the modern teacher is to help forge a stronger chain that will hold the child fast in times of danger, as though it were an anchor of safety.

Some Questions for Consideration

1. What are some of the safety problems of the animal kingdom?
2. How has the progress of the centuries brought with it a consequent increase of hazard to human life?
3. A Chinese proverb says: "It is better to save a human life than to build a seven-storied pagoda." What is the significance of this? Why is the pagoda used in the comparison?
4. What is meant by the term "safety minded"?
5. What is meant by the statement, "it usually takes two to practice safety, you and some one else"? Is your school doing organized work in individual and public safety?
6. The National Safety Council reports that June is the peak month for accidents to children. Why is this?

References for Further Reading

- Beard, H. E., *Safety First for School and Home*. (The Macmillan Company.)
- Cobb, Walter F., *Chalk Talks on Health and Safety*. (The Macmillan Company.)
- Payne, E. G., *Education in Accident Prevention*. (Lyons and Carnahan Company.)
- Literature of the Education Division, National Safety Council, 120 West 42nd Street, New York City:
- The Runaway Ball* (A play in two scenes).
- Safety Education in the Elementary Schools: A Technique for Developing Subject Matter*. National Safety Council, 108 E. Ohio St., Chicago, Ill.
- Trial by Fire* (A fire prevention play). National Board of Fire Underwriters, New York City.

CHAPTER XIII

"THIS ONE WON'T COUNT"

The rulers of mankind. People have long known the folly of delegating great power to any single person, because it is impossible to foretell how that power may at some later time be used. Unjust and unwise use of authority has made the hereditary ruler a relic of the past. Kings are going out of fashion. Nowadays people prefer to select their rulers and to make the tenure of office dependent on service rendered.

Affecting our lives much more vitally than princes or presidents, however, are those rulers in the realm of the mind, our habits. Unfortunately, too few of us take the attitude toward habits which limits and directs their authority.

Habits are at once our powerful rulers and our valuable servants. Both men and animals have the power of forming habits. One of our characteristics, as human beings, is that we can determine the habits we form, and modify them in any direction. So far as we have learned, an animal's habits are consciously purposeful only to the extent that they afford immediate physical satisfaction. The animal forms habits of doing whatever makes it comfortable, whatever satisfies it.

So far as the animal is concerned, whenever it seems to have formed a habit that results in anything more than the feeling of satisfaction, we shall usually find that it has been trained. In other words, the trainer has drilled the animal in certain actions until those actions become customary responses to certain conditions. Man, on the contrary, is usually deliberate in his habit formation. He

looks ahead, foresees possible results of a plan of action, and makes sacrifices if necessary in order to reap future benefits. Unless he is more animal than human, man, in forming habits, is not governed solely by the prospect of immediate physical satisfaction.

Nature intends habits to serve us. Nature does not equip us with habits as she does with reflexes. Instead, we must form habits, and at first by voluntary means. Later, after lower brain centers have taken control, habit operates independently of thought.

Since habits, like reflexes, require no mental effort, some writers speak of them as “acquired reflexes.” But this term is likely to mislead. For we must keep in mind that reflexes are a part of the nervous system even at birth, whereas habits are not yet existent at that time. Nature gives every living creature certain reflex mechanisms as part of its life equipment. Habits, on the contrary, may be formed throughout one’s life.

If there were no such thing as habit formation, life would be difficult if not impossible. We should be so busy directing our mental and physical activities that no time would be left for progress. If we were incapable of forming habits, it is doubtful that we should ever be able to walk. Certainly we should never be able to walk easily, for walking requires a high degree of nervous coördination, and we should have to think our way through that coördination each time we took a step. We should have constantly to remind ourselves to perform actions which we now do almost without thinking of them. As it is, we acquire a habit by repeating an action many times; when it is acquired, we no longer have to think about the action, but can devote our time to something else. Habits, therefore, economize both time and effort.

Habits cannot be killed. Since a habit is only a physi-

cal or mental action repeated until it becomes almost involuntary, and since man can choose the action which is thus repeated, it is obvious that there are harmful as well as useful and time-saving habits. And the difficulty of ridding ourselves of an undesirable habit makes it important that only helpful ones be allowed to fasten themselves upon us. We cannot be done with a habit at will. No matter how great an effort we make to eradicate a habit, it nevertheless remains entrenched in some remote part of the nervous system ready to regain control on the instant whenever the opportune moment arrives. No matter how much will power we exert, no matter how much time has elapsed since a pernicious habit was apparently conquered, we may never feel assured that any habit has been completely eradicated from our mental make-up. A habit must always be reckoned with; we can keep it inactive only by sheer force of will.

We must accept the fact, then, that we cannot destroy our habits utterly, to the extent that they cannot return to harass us again. Accordingly we must do the next best thing; we must discover new habits which our nervous system will accept in lieu of the old ones. This is not always an easy thing to do, for the nervous system may protest vigorously against the change, so vigorously, indeed, that the mind will have to exert all its strength and will power in order to achieve victory. Nevertheless we must exchange new habits for old, good ones for poor. We must barter with the nervous system, using all the cleverness we can command. We must keep in mind the experience gained through the ages: when good habits are neglected, bad habits may be expected.

If habits are of the right kind, they are our best friends. Statesman and musician, actor and artist, athlete and surgeon, all owe their success largely to the right kind of

habits. Throughout life, man is a creature of habit. He is also a creator of habit. And man's success or failure, happiness or sorrow, strength or weakness depend finally upon whether habits formed in life have served the body well or ill.

Kinds of habits. As we contemplate the importance of habit formation, we should keep in mind the following classification of habits and exert every effort to choose proper habits in each group and make them function.

1. *Physiological habits.* These are the habits that regulate the proper and efficient functioning of the body. They include habits of eating, sleeping, exercise, and waste elimination.

2. *Protective habits.* By means of these we protect ourselves. They include the practice of self-defence and the common rules of safety.

3. *Emotional habits.* These are the habits of emotional control, as the habit of controlling one's temper.

4. *Habits of skill.* These include the habits that make for adjustment of the body to the requirements of vocation and avocation, particularly to the requirements of sports.

5. *Mental habits.* Among the most valuable mental habits are concentration, perseverance, promptness, accuracy, cheerfulness, and hopefulness.

6. *Spiritual habits.* Among these are prayer, charity, reverence, and tolerance.

7. *Social habits.* Friendliness, good manners, and co-operation with one's fellows.

Habits that destroy. The baneful influence of habits that are in conflict with normal physiological and psychological functioning was well expressed by the poet Dryden.

Ill habits gather by unseen degrees,
As brooks make rivers, rivers run to seas.

Just as tiny brooks unite to form rivers that at times bring disaster, so, too, do harmful habits finally bring about the destruction of character and even of life itself. Unlike the river on rampage, the harmful habit never subsides. It can be controlled only by substituting a worthy habit in its stead.

Any number of habits seriously handicap those so unfortunate as to form them. One of the worst, certainly the most dangerous by far, is the drug habit. Every year it levies a terrible toll of suffering, physical and moral disability, and death upon thousands, despite all that is done to eradicate it. Another is the nostrum habit, that is, the very general habit of using patent medicines for real and imagined ailments.

Other vicious habits include the habitual use of intoxicating liquors, the use of mild narcotics, and the habits of over-eating and under-exercising. Harmful mental habits such as worry, fear, jealousy, and introspection are also distinguishing characteristics of people in this age of bustle and hurry. These habits are not alone evils in themselves; they work actual physical harm. Last, but by no means least in importance, is the general habit of irregularity in attending to the physiological requirements of the body. This habit, almost universal, works much harm in the end, even though it seems to work but little at any one time.

"This one won't count." Every reader of Irving's story knows the futility of Rip Van Winkle's assertion, "this one won't count." Each drink Rip took did count, however, as every impression on the nervous system is certain to count. No matter how trivial the impression, it is recorded, even though faintly. No matter how slight the activities of the nervous system may be when considered as individual items, in the aggregate they finally amount

to much. Repetition is the secret of effective habit formation. We need only to make a small beginning; that beginning will finally grow into a powerful influence if we cultivate it.

Sow a thought and reap a deed.
Sow a deed and reap a habit.
Sow a habit and reap a character.
Sow a character and reap a destiny.

The tablet of the mind. Poets and philosophers often speak of "the tablet of the mind." And the phrase is aptly chosen, for the mind is indeed a tablet upon which every impression is recorded indelibly. We might well wish that the mind had the qualities of the old-fashioned school slate; then it could be completely cleaned and a fresh start made when we had been in error. Unfortunately, such is not the case. We can, however, write a record that is better than the old, and we can write it so firmly, so boldly, that it will take the place of the one which we want to dispense with. But doing this requires great effort of will and much strength of purpose. Strength of will, clearly cut aims, and avowed resolution to form good habits rather than bad will serve us in the conduct of life, will indeed help us to get a fresh start despite the errors of the past.

SOME SUGGESTED METHODS

Habitgrams

An ounce of performance is worth a ton of complaint.
Habits are ladders: some lead up, some down.
The brakes on habits are notoriously poor.
Which is the master, habit or you?
You and habit are in business for life.
Good habits neglected mean bad habits collected.

Some Blackboard Devices

1. **The difficulty of breaking habits.** Discuss with the class the importance of forming correct habits. Emphasize the fact that it is difficult to break a bad habit. The boy who stands in the wrong position at the home plate, or who swings his bat in the wrong manner, experiences great difficulty in breaking himself of the habit unless he changes his form as soon as possible. Pupils will usually be able to give illustrations of the difficulty of breaking bad habits. To bring out the lesson, use the following device. Print HABIT on the blackboard. Ask pupils to imagine that it is determined to break a habit, such as, for example, carelessness in crossing the street. Erase the H. This signifies one effort to break the habit. Show that there is still A BIT left. Erase the A. This signifies continued effort to break the habit. There is still a BIT of the habit left. Assume that the pupil is determined to break the habit, and erase the B, then note that you still have IT. It is not easy to break a habit, but even so, no one should ever give up. Erase the I. The situation begins to grow encouraging, for now only half of IT, the T, is left. Try again. Erase the T. This at last makes an end of the HABIT.

2. **The importance of forming correct habits.** It is easier to write RIGHT than it is to right a wrong. Show the class that one is a matter of crayon, pencil, or pen; the other is a matter of real effort that sometimes requires days. Make the point that it is easier to form (print F O RM on the blackboard) than to reform (prefix RE). Show that good habits SERVE, and that bad habits SWERVE (insert the W in the right place). Good habits SAVE us from trouble; bad habits ENSLAVE us in trouble. (Make the necessary change in S A V E to make it spell ENSLAVE.)

3. Rational habits. Print RATIONAL HABITS on the blackboard. Underline I O in RATIONAL, and suggest that the class name 10 rational habits. These should include: (1) Food, (2) cleanliness, (3) fresh air, (4) sunshine, (5) exercise, (6) sleep, (7) waste elimination, (8) recreation, (9) industry, and (10) workmanship.

Home Assignments

1. Some New Year's resolutions. This device may be used whenever the teacher wishes, regardless of the time of year. Discuss with the pupils the significance of the New Year's resolution custom, and remind them that the most important resolution one can make is the resolution to keep resolutions.

Ask pupils to prepare, individually, a set of twelve resolutions. Each pupil is to seal his resolutions in an envelope, write his name on the outside, and bring the envelope to class. Announce that at the end of the month the envelopes are to be opened. Each pupil will then be checked as to his success in keeping his resolutions. Advise the pupils to follow this rule in preparing resolutions: First, be sure the resolution is right; second, live up to it with all one's might.

2. A list of habits. Ask pupils to make a list of different habits that people have, and a second list of habits that animals have. Bring the lists to class and discuss them. When the lists of human habits are read, have pupils tell whether they are good or bad. Read the list of animal habits and comment on them in like manner.

Some Teaching Devices

A chain of good habits. (See Figure 46.) Take five sheets of ordinary white note paper and place one upon the other (a). Fold lengthwise (b) and then crosswise

(c). Use scissors to round off the four corners (d). Fold crosswise again (e) and cut out a U shaped piece of paper (f). Paste the links together, end to end, and then fold up the chain, bending the links on dotted lines shown in (g). Provide a suitable cover for the chain. (See h for suggestions.) If directions have been properly car-

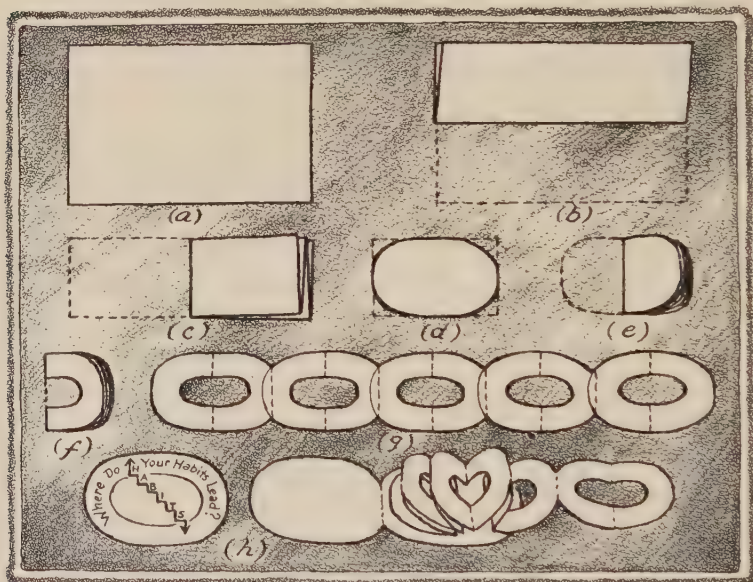


Figure 46. A Booklet: Habits That Help

ried out, the chain may be unfolded one link at a time for class discussion.

As a preparation for the use of the habit chain, write Longfellow's poem, "The Village Blacksmith" on the blackboard, or read it to the class. This forms a suitable introduction for much that will be said in discussing chains according to the following suggestions.

Explain how chains are made. Tell of the necessity for good steel, red hot metal, hard blows, good workmanship,

and fine tempering. Tell of the uses to which chains are put. (Skid chains, anchor chains, chains on playground apparatus, chains for restraining huge animals such as elephants.) Tell the interesting story of the use of a chain across the Hudson River during the Revolutionary war in order to keep enemy boats from approaching the fort at West Point, New York. Give instances of chains that serve a good purpose. Tell of chains used to serve an evil purpose, as, for example, the use of chains for binding human prisoners.

Man makes chains to bind animals. But animals are also bound by the chains of habit. Tell the story of the horse that returns to its stall in a burning stable. Chains of habit are invisible, but quite as strong as visible metal chains.

Metal chains are strongest the day they are made. From that time on they weaken through wear and corrosion. Only habit chains grow stronger with use.

After an introductory talk that includes as many of the above points as the teacher cares to use, or any others she may have in mind, show the pupils the paper habit chain described in Figure 46. Unfold the first link. Ask pupils to name the first link, to suggest a suitable title for it. When the first link has been discussed, label it plainly, then unfold the second link. Proceed in this fashion until all links have been discussed and labelled. The better plan is to discuss one or two links each day rather than to discuss all links at one time. This booklet of habit links may be used for review lessons from time to time.

1. *The food link.* The body needs iron, calcium, and other minerals. Discuss needed foods.

2. *The fresh air link.* Discuss fresh air and ventilation. Oxygen rusts iron, but not living tissue.

3. *The cleanliness link.* Water is bad for the metal of iron chains; it is a very good thing for human beings.

4. *The exercise link.* Discuss habit in building muscles, mind, morals.

5. *The caution link.* Discuss safety first. There is need to examine the habit chain occasionally to see that it is developing no weak links.

6. *The rest link.* Discuss the various aspects of rest. Even the blacksmith mentioned in the poem needs rest from time to time.

7. *The play link.* Play keeps the human machine from getting stiff or "rusty."

8. *The courage link.* Discuss the difference between courage and foolhardiness.

9. *The character link.* Explain that a chain which cannot be depended upon is worthless. Make this the starting point for a simple discussion of character.

10. *The health link.* Explain that a chain upon which one depends at times of danger must at times be tested for weakness. Use this as a starting point for a discussion of weaknesses that are likely to develop as a result of inattention to the body.

At the conclusion of the talks on habit chains, the teacher may profitably tell stories from the lives of famous people who have been distinguished for the habits that contributed to their success.

From time to time during the discussion of the habit chain, the teacher may make a classroom demonstration of some fact that will help to impress pupils with the topic under consideration. For example, she may show that a rubber link in a chain would be flexible but undependable. An elastic conscience resembles a rubber link. A common horseshoe magnet may be used to represent the pulling strength of will power. The difference be-

tween tempered and untempered steel may be illustrated to show the need for forging strong habits by constant repetition.

SUMMARY

As Dr. George A. Dorsey points out in his interesting book, *Why We Behave Like Human Beings*, "man's really distinctive trait is his capacity for modifiable behavior." Habits are not peculiar to man; but the ability to modify habits, to make them serve certain definite purposes, and to practice certain actions to the end that they may result in habits, these qualities are characteristic of man alone.

The habits of man differ from those of animals also in that they do not manifest themselves solely in a physical way. Man's habits deal with intellectual, emotional, moral, and spiritual phases of life. In forming habits, man chiefly directs his energy to the acquisition of mental characteristics. Animals, on the contrary, merely tend to acquire modes of behavior that better accommodate them to their environment. This is one important difference between man and animals: man is the creator of his habits; environment determines the habits of animals.

Formation of correct habits of living is one of the most important considerations in any well-conceived program of health education. Teachers should lose no opportunity to motivate their pupils in the formation of habits of health and safety. Health information should carry over into habit formation. Health facts should eventuate in health acts. No matter how interesting a program of health education may be in itself, it cannot be considered successful unless pupils put into practice what they learn. Life and habits are as inseparable as fire and heat. The most inspiring aspect of health education is that it offers opportunity to influence people to form right habits.

Some Questions for Consideration

1. Read the biography of some person whose life story you consider inspiring. Make a list of that person's habits, so far as you can do so from the account in the biography. In what ways did those habits contribute to the person's greatness?

2. Is it the better plan to give rewards for practicing health habits or to let the resulting improvement be its own reward?

3. Have you formed health habits (1) because you truly felt the desire to improve your health, (2) merely because you wanted your pupils to see that you practice what you preach, or (3) because you fear the judgment of society?

4. Try to place in their order of importance in childhood the following types of habits—physical, mental, social, emotional. Which of these has the most profound influence upon the individual's career?

5. The essence of the law of habit formation is repetition. Something else, however, is necessary. What is it? Why, for example, would no one ever form the habit of brushing his teeth with a vile-tasting preparation?

6. It is stated that for every problem child there is a problem parent. How do you explain this in the light of the new psychology?

7. Are you familiar with the work of the Child Study Association of America, in New York City? The Association looks to the parent for an understanding of the child, and it believes that the secret of child health education lies largely in the education of adults in the management and guidance of children. What are some of the ways in which teachers can give greater effectiveness to their health education program through home visiting?

References for Further Reading

- Dorsey, G. A., *Why We Behave Like Human Beings*. (Harper and Brothers Company.)
LaRue, D. W., *Mental Hygiene*. (The Macmillan Company.)
Norsworthy, N. and Whitley, M. T., *The Psychology of Childhood*. (The Macmillan Company.)
O'Shea, M. V. and Kellogg, J. H., *Health Habits*. (The Macmillan Company.)
Pratt, G. K., *Your Mind and You*. (National Health Series.) (Funk and Wagnalls Company.)

CHAPTER XIV

THE BODY PAYS MORE THAN THE PURSE

Dangerous habits. Man must be careful that the body which he takes pains to nourish and keep in good condition in order that it may serve him, is not injured by his own folly, in any manner. Particularly must he be on guard lest his own senses play him false. His pleasure and pride in activity may lead him to overdo, and to weaken his body. His eagerness for vitality, energy, or pleasure, may lead him to indulge to excess in artificial stimulation which may shorten his life. It is the purpose of this chapter to deal particularly with these artificial stimulants and with other habits which may do permanent injury.

The nature of stimulants. It is well known that stimulants taken through eye and ear are better than those taken through the mouth. Natural stimulants leave no unpleasant after-effects; they do their work without causing habits to be formed. Music, encouraging words, and inspiring sights stimulate and arouse the body to action in a natural, prompt, and healthful manner, provided the emotions are sufficiently controlled by the will to make certain that energy expended is directed into proper channels and made to serve useful purposes. Fresh air is a natural stimulant. Cool water stimulates the body. Fear, if not so great as to be paralyzing, is a powerful stimulant. Pain is a stimulant, and so, too, are happiness and enthusiasm.

Man has never been satisfied to limit himself to the use of such natural stimulants as those just mentioned. Only the healthy body reacts to natural stimulation.

Consequently the demand for artificial stimulation arises, in most cases, because the body needs energy with which to meet a situation for which its natural reserve forces are inadequate.

The most common stimulants are coffee, tea, and certain well-known beverages obtainable at most soda fountains. If practised moderately, the coffee and tea habit deserves little criticism. The habit has social worth. The time spent in drinking coffee or tea usually forms a pleasant part of the dinner hour. Even the aroma of these beverages conduces to good cheer. When drunk moderately, neither tea nor coffee is a stimulant that needs to concern one unduly. The body has a wonderful power of adjusting itself to conditions, and in a majority of instances the moderate drinking of coffee is seemingly of little physiological significance so far as health or longevity is concerned. Too frequently, however, those who at first use these stimulants only moderately soon begin to use them to excess. When that time arrives, the habit of using coffee becomes a menace to health, just as does the habit of using any other stimulant.

Alcohol and tobacco. If we could establish the point of physiological moderation for each person, and assure ourselves that the point would never be passed, to result in excess, we should have less cause to be concerned about the problem involved in the use of alcohol. Unfortunately we cannot establish such a point, as the history of alcoholism proves. As a preservative of dead tissues, alcohol is valuable. It is harmful to living tissues, it is unnecessary, and, taken in large amounts, it is intoxicating and deadening. Distilleries have caused greater human misery than all the wars of the nations.

The case against tobacco is quite unlike that against alcohol. Tobacco is a financial and physical problem.

Its moral effect and its threat of a social menace seem not to alarm those who are in position to know of its effects on society. No one can deny that the use of tobacco is an expensive habit. Used to excess it is harmful. The habitual user of tobacco often suffers from shortness of breath, fast pulse, and nervousness.

It is barely possible that at some time in the future we may regard tobacco as a friend of man. It is highly improbable that we shall ever consider it a friend of youth. Progress in solving the tobacco problem will be hastened when we come to regard tobacco as a physical question and not as a moral one. In many respects the coffee and tobacco habits are alike; the use of one may be as respectable as the use of the other. If the trend of the times is an index, moralists may some day join with physiologists in regarding the two habits as fairly harmless though for some that day is rather far off.

The use of nostrums. An important phase of health education is that dealing with the rapidly increasing exploitation by quacks of the real and imagined ills of gullible people. Ignorant charlatans flood the country with nostrums or patent medicines of many kinds. The federal government helped to meet the situation by passing the Pure Food and Drug Act in 1906. This law prohibits the makers of patent medicines from placing on the label or in the package any false or misleading statements regarding the composition or origin of the contents. An amendment to the law prohibits false or fraudulent statements regarding the curative power of the remedy and is enforced.

The Pure Food and Drug Act also requires makers of patent medicines to declare the presence and amount of a number of the more potent drugs and their derivatives. Among those drugs are opium, morphine, alcohol, cocaine,

heroin, alpha eucaine, beta eucaine, chloroform, cannabis indica, chloral hydrate, and acetanilide. Nothing in the federal law, however, prohibits the use of newspaper and magazine advertising, house-to-house advertising, posters, placards, and other methods of telling the public about the alleged "virtues" of patent medicines.

Full ranks of nostrum-takers. Why do so many people join the ranks of the nostrum-takers? For several reasons, among them the following: (1) Taking nostrums seems to cost less than visiting a physician; (2) it is easier to take a dose of patent medicine than to go to the doctor and perhaps have to wait for him; (3) skillful advertising is a powerful factor in recruiting the ranks of patent medicine users; (4) dissatisfaction with the physician causes some people to want to try something else; (5) friends who have recovered from an illness, and who attribute the cure to a patent medicine instead of to Nature, like to recommend the particular medicine that seems to have cured them. Advertising, however, is the mainstay of the patent medicine business.

True enough, some few patent medicines are legitimate and valuable; those serve a good purpose. One of the chief objections to the patent medicine business is that advertising commonly employed by the manufacturers of them tends to make people think of their real or imagined ills and aches. In many cases the result of that constant introspection is to make the lives of such persons a routine of symptom discovery and self-treatment. Further, the use of patent medicines leads to delay in cases of real medical need, for the patent medicine taker usually keeps trying some other nostrum. Always he is buoyed up by a hope that a little more will effect a cure. The chances are that he will not be cured till he makes up his mind to secure advice from a reputable physician. The

drug habit must also be included in the above charges against patent medicines and patent-medicine users.

What can be done? Apparently we cannot abolish the patent medicine business at one stroke. Indeed, it is doubtful if one should wish to do so, for some patent medicines really serve humanity. The true health educator should be most interested in improving the attitude of people towards using competent medical help. He should make an effort to instruct adults so that they will come to understand the true significance of sleeplessness, coughs, irritating and disturbing pains, fevers, and other signs and symptoms which indicate the need for medical attention. People should learn that when home remedies do not relieve in such cases, then the proper thing to do is to call the physician. Above all else, they should be taught to decline medicines prepared for others, and medicines prepared by others than competent doctors, pharmacists, and nurses.

A proper attitude. Our attitude toward the whole question of stimulants, narcotics, and nostrums must be sane if we expect to influence the health habits of young people in any helpful way. The future health program is to be one of moderation. With the increase of leisure, people are desirous of enjoyment. In future, the life that will be most attractive may not be the one which is best physiologically; it will be the one, however, which offers most emotionally, socially, and economically, as well as physically. Its rule will be temperance rather than strict abstemiousness. Matters that have to do with health will be less and less confounded with those which deal with religious beliefs and social customs. Moderation has always been a sort of middle ground between self-denial and self-gratification; for most people moderation is still the secret of healthy living.

SOME SUGGESTED METHODS

Slogans

A stimulant is a spur; the best workers rarely need it.

The nostrum-taker works for the nostrum-maker.

The champion hypochondriac is usually a patent medicine-taker.

He who treats himself may have a fool for a doctor.

The best stimulants are rest and recreation.

Some Blackboard Material

1. **The cost of coffee.** Discuss coffee as a food whose value depends upon the sugar and milk added to it. Explain that since milk adds food value to coffee, it is more sensible to drink milk alone than to drink milk and coffee. Parents do not give their children milk and water. Why should they give them milk and coffee? If one's aim is to gain strength, one should take milk full strength.

Coffee always costs, although the cost may be so slight as to seem negligible. Coffee costs children more than it costs adults. Print the word COFFEE on the blackboard, and underline FEE. These letters show that the excessive use of coffee always has its fee. This fee may be nervousness, sleeplessness, or poor nutrition. Children cannot afford to pay such a fee; the growing process takes all the energy they can spare. Coffee can no more satisfactorily take the place of milk in a child's diet than candlelight can be substituted for sunshine in promoting healthy growth. So far as concerns the use of coffee, the rule for children might well be *prohibition*; the rule for adults, *moderation*.

2. **The magic hat of health.** Ask pupils if they have ever seen a magician take a live rabbit from an apparently empty hat. Then discuss magic in order to pave

the way for this exercise. Explain that you are about to do some tricks with a "Health Hat" (which you have previously drawn on the blackboard as Figure 47 shows). Point out the word HEAL in HEALTH. Use this as the basis for a discussion of wounds and their care and of the healing value of health. Then have the pupils find other words in the magic "Health Hat". Some pupil will find EAT. Have pupils tell what they should eat to have



Figure 47. The Magic Hat of Health

health. Pupils will find TEA in the "Health Hat," of course. When that occurs some attention may be given to the use of tea and coffee by children. When the word HEAT is discovered, discuss the importance of heat for cooking foods and for sterilizing surgical instruments. Talk some about body heat. Make the point that foods produce heat. Name the chief heat-producing foods.

In case any pupils find other words in the magic "Health Hat," the resourceful teacher should be able to make those the themes for interesting class discussions.

Some Teaching Devices

1. Making health "movie" films. The following device is useful for teaching almost any topic of hygiene, sanitation, or safety. First of all, the teacher selects or prepares a suitable story that embodies the topic, and tells it as a whole to the class. Groups of pupils (those in a row or half-row, for example) are then assigned "to take pictures" of respective parts of the story. "Taking a

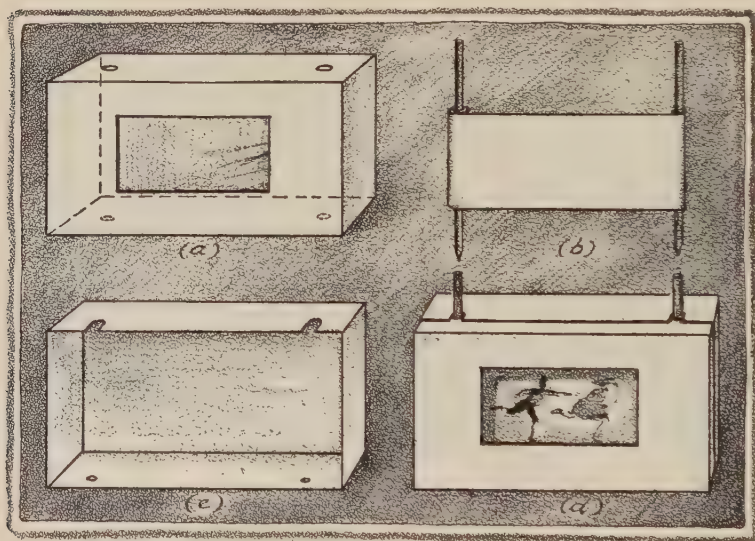


Figure 48. Health "Movie" Films

picture" means illustrating an episode. Each pupil in a group draws his own picture with colored crayons; the best picture of a group is selected for final use. When children understand the plan of procedure, the teacher again reads the story, this time by units.

All pictures selected are then pasted together in proper order. Pictures should be drawn on sheets of paper of the same size. When pasting up the pictures, the teacher

prepares suitable captions for insertion at proper points. She also begins and ends the series with a blank sheet.

The health "movie" film may be exhibited by means of a device like that shown in Figure 48. Take a strong cardboard box somewhat larger in size than a single section of the "film". Cut an opening in the lid of sufficient size to permit each picture to show through. This opening serves as a "stage." Cut two holes on each side of the box (a) and through those thrust rounded sticks, or pencils, to which the film has been pasted. (See b.) By turning the sticks properly, the film may be made to pass before the opening in the box lid. The back of the box (c) is fitted on to the front section (a).

A story like the following is suggestive of the work that may be prepared for presentation to pupils. To call attention to the need for giving early vigilance and care to a cough, the teacher may tell about a little girl whose parents treated her stubborn cough with remedies suggested by a neighbor. The neighbor had seen an advertisement of the remedy in a patent-medicine almanac. The child continued to cough, but attended school, nevertheless. Finally, after several children had begun to cough, and after the child's cough had become worse, her parents called a physician. He found that the child had whooping cough; so, too, had all the other coughing children in the school, and several other children of the neighborhood. Because of this ailment, which might have responded promptly to treatment if a physician had been called at the outset, all these children lost time from school, all missed the sport of going to entertainments for awhile, and some became dangerously ill. Make the point that it is always better to take medicine prescribed by a physician than to follow the suggestions of well-meaning acquaintances.

2. **A question-picture-answer device.** The device (shown in Figure 49) is useful for securing interest and stimulating pupils to reason about health and safety knowledge which they have acquired.

On a large size chart print several questions pertaining to health and safety topics. Number each. From suitable

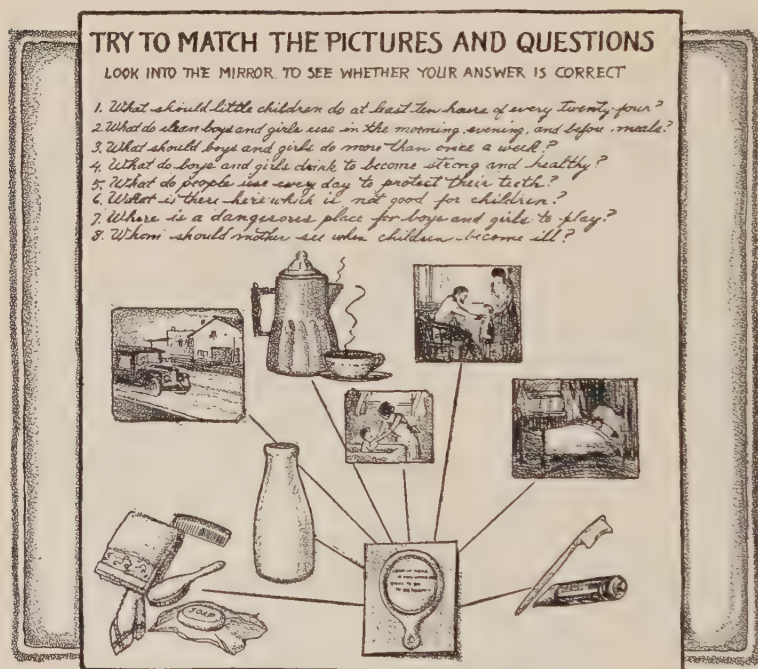


Figure 49. A Question—Picture—Answer Device

sources clip pictures (preferably colored ones) that illustrate the answers to the various questions. Number the pictures differently from the questions. Prepare and attach to the chart a little booklet (made of folded sheets of paper) in which facing pages bear respectively the numbers of the questions and the numbers of the pictures that answer them.

From time to time display this chart before the class and have pupils try to match pictures and questions.

Preparing a chart of this kind, selecting the questions and pictures for it, and making the booklet to accompany it, make excellent home work for pupils. When pupils make such charts at home, the booklet of answers should be sealed with a slip of paper before the work is brought to school so that there will be no opportunity for one pupil to study the work of another until the whole has been used as a class exercise.

Some Home Assignments

1. **Autobiography of a patent medicine bottle.** Explain what an autobiography is. Have pupils imagine that they are patent medicine bottles, then write an account of their life experiences.

The idea of the autobiography may be used for a study of the house fly, of dust, of germs of various kinds, and of other health and safety topics.

2. **Doctor Happyday's favorite prescriptions.** Explain that Doctor Happyday is a writer whose book each person can find in his own mind. Explain, too, that a prescription is a sort of recipe that the doctor hands to the druggist. It gives the druggist instructions for making a medicine, tells him what ingredients to use, how much of each, and what instructions to give the patient for using the medicine when it is finally compounded. Tell pupils that the prescription below is a favorite.

Rx 1 busy day of work, study and play

3 good meals

Mix well with plenty of friends and divide into happiness, healthfulness, and helpfulness.

Take one of each as often as possible.

Doctor Happyday

Ask each pupil to look in Doctor Happyday's book, find there a favorite prescription, and then write it out for the use of his friends.

Some Schoolroom Games

1. **A skin-the-cat wand relay.** Assign an equal number of pupils to each row of seats. For a wand, use a broom stick (having the broom cut off) or a stick of similar size and shape. At the start of the game, the first pupil in each row holds such a wand. Begin the game by having alternate rows compete.

At the command "Go", the first pupil in each racing row, who has been holding the wand with a hand at either end of it, passes it back over his head to the player seated immediately behind him. The latter, in turn, passes the wand to the next player behind himself, and so on until the last player in the row receives the wand.

The last player then leaves his seat and runs forward through the right-hand aisle to the front of the room, carrying the wand. As he runs, all the other players in the row move back one seat, thus leaving the front seat of each row unoccupied.

As soon as the wand-carrier reaches the front of the room, he stops, faces the class, bends forward, and steps with first one foot and then the other over the wand. While he does so he must not let go of the wand with either hand. He then passes the wand over his head and brings it down before him to the original position. Doing this requires a movement of arms and body similar to that performed when "skinning a cat" on a trapeze.

When the wand-carrier has "skinned the cat", he takes the now vacant front seat and passes the wand to the pupil behind him in the manner already described. So the game continues till every child in a row has been to the

front of the room. The winning row is that whose occupants first complete the race.

When one set of alternate rows has raced, the other set may compete. This plan of play avoids confusion. Winners of each group may compete for the room championship.

2. **A whirligig relay.** This is an active game that provides much fun for players. Since it does not require the players to run, it does not disturb other classes. Have an equal number of pupils in each row, and let all rows compete at once.

The object of the game is to pass some object (beanbag, eraser, book, or ball) down a row from player to player and back again to the front of the row. As soon as a player gets the object in hand, he rises in the right aisle, turns around once quickly, takes his seat, and passes the object to the next player who repeats the action.

SUMMARY

Teachers must use much caution and good judgment when discussing stimulants, drugs, and nostrums with young pupils. Children differ greatly from adults in psychological make-up. For that reason teachers must never be too pronounced in their remarks concerning stimulants, drugs, and nostrums, and they should make only statements that may be subject to certain qualification.

The health problems caused by nostrums are seemingly of greatest national concern because they involve quackery. The advertising literature of the quack tends to make people introspective; it raises the specter of illness and disease; it plays upon prejudice and ignorance. All this is to the interest and profit of the nostrum manufacturer only. People would much more advantageously put their trust in the spoken word of the reputable physi-

cian who makes a personal examination of the patient before completing his diagnosis, than to depend upon the printed words of a distant stranger, of a charlatan, perhaps, whose only interest in the health of his prospective patient is the money he can make.

Charlatans have not failed to prepare an alleged specific for every real and imagined human ailment. Most of these take the common forms of medicines; others are devices. But whatever else may characterize the material offered for making a cure, it is always put forth as a secret compound or process, a so-called recent discovery kept secret for the time being. Secrecy is the quack's most effective method of reaping profits. By means of it he capitalizes upon prejudice and ignorance.

The most harmful effect of the nostrum is that it promotes delay at a time when, of all others, delay is likely to be most dangerous. The ailing person can be doing no more than experimenting whenever he spends time on nostrums. Quite apart from any relief he may obtain, the time consumed in making experiments rapidly lengthens until presently the patient finds himself in far worse condition than at the outset. His case is even less likely to respond to treatment than at the onset of his disease. This fact alone should cause the public to suspect remedies proposed by any other than reputable and experienced physicians of good standing among their fellows.

It is the teacher's business to inform her pupils about the danger to health that comes from taking nostrums of any kind. She should impress them with the necessity for treating illness early in its history. She should make clear the reasonableness of committing the care of one's health to members of the medical profession. She should strive to build up a proper attitude towards the periodic health examination as a preventive of disease.

Teachers should take special pains to develop a proper attitude in their pupils towards legitimate preparations of manufacturers who coöperate with the medical profession, whose formulae are available to competent authorities, and whose products are standardized. Such products are of real help to the patient, especially at times of emergency and before the arrival of a physician. The druggist who dispenses those is a useful adjunct to the doctors themselves. On the contrary, the druggist who simply passes out nostrums at the request of his customer cannot be regarded as more than a salesman.

Questions for Further Consideration

1. A French wit said: "The first quack was the first knave who met the first fool." Explain this, and discuss the methods commonly used by quacks for exploiting the public by means of medical frauds.
2. Give reasons why one should suspect the value of testimonials commonly published by patent medicine manufacturers.
3. The climate of the temperate zone is apparently best for the physical and mental development of human beings. Explain why temperate health habits are also likely to prove best for that sort of development.
4. In what way has the menace of "patent medicines" changed since the enactment of the National Food and Drugs Act (popularly known as the Pure Food and Drug Law) and the Harrison Narcotic Law?

References for Further Reading

- Fisher, I. and Fisk, E. L., *How to Live*. (Funk and Wagnalls Company.)
- Fisher, G. J. and Berry, Elmer, *The Physical Effects of Smoking*. (The Association Press, 124 E. 28th St., New York City.)
- Pearl, Raymond, *Alcohol and Longevity*. (Alfred A. Knopf Company.)
- Nostrums and Quackery* (Volume II). American Medical Association, 535 North Dearborn Street, Chicago, Illinois.
- The Peril of Narcotic Drugs*. International Narcotic Education Association, Los Angeles, California.
- Outlines for Health and Temperance Teaching*. National Women's Christian Temperance Association, Evanston, Illinois.
- Towns, C. B., *Habits That Handicap*. (The Century Company.)

CHAPTER XV

THE WEIGHT OF WORRY

Using some unfair scales. The scales with which we weigh our worries are often unfair to us. Whether we place our worries in the scale of public opinion, or weigh them carefully in the delicate balance of our best judgment, we are fortunate, indeed, if we get honest weight. Frequently, so frequently, indeed, that it seems almost to be the rule, the smallest worry weighs most, the largest worry weighs least.

Except in a general way, man does not know the psychological weight of his worries. A man may well understand that he should cease to take interest in his worries lest they begin to pay dividends to him in increasing amounts of physical and mental disorders, but he usually experiences great difficulty in mastering the situation which this condition produces. We may well remind such a man of Sir James Barrie's clever line, "...to have twa minds is as confusing as twins."

The outstanding enemy of the mind. Phantom though it be, worry crushes sanity by its very weight unless work and calm judgment and hope unite to free the mind of its burden. Worry has been defined by Dr. Edwin L. Ask, of the British Institute of Hygiene, as "a disorganization of mind control, resulting in see-saw movements of thoughts backwards and forwards..." Because of the unusual demand upon the nervous system that results from the activities of this age in which we live, hygienists are emphasizing the necessity of devoting more attention to the hygiene of the normal mind, especially during childhood and adolescence.

Ability and stability. Available evidence tends to support the general opinion that during the course of man's development his mental stability has decreased. Nor is it difficult to find a plausible reason for this condition. Training increases quantity and quality; straining decreases it. As regards mental stability, conditions of life have resulted in no little straining of the mind's power to make all adjustments required of it. As a result, mental stability has in many cases failed to keep pace with mental ability. The results of such a condition give much concern to society and particularly to mental hygienists.

The mental hygiene movement. The Report of the Joint Committee on Education, of the National Education Association and the American Medical Association, regards the healthy personality as the product of mental, emotional, moral, and social health. The aim of those who further the mental hygiene movement is to help people obtain this healthy personality. The mental hygiene movement is a "fight against man's last spectre, mental disease", by which, says Dr. George K. Pratt, assistant medical director of the National Committee for Mental Hygiene, "there is no home unmenaced".

Mental hygiene deals with conditions that make for mental balance, self-confidence, purposeful and persistent application, ability to solve the problems of adjustment to society and to life, a wholesome attitude toward one's fellows, and sound organic health. In brief, mental hygiene keeps the mind upon its throne despite dissension in the nervous kingdom.

Mental hygiene is one of the outstanding features of our present-day program for health education, because no one is immune to the conditions which lead to disturbance of mental health. Mental hygiene emphasizes the importance of a new *R* in educational work. That new

x

R indicates *Reliability*—mental, emotional, moral, and social reliability. It offers a solution to the problem of developing reliability.

† **Causes of mental instability.** Many conditions are responsible for mental instability. They may be classified into four groups: (1) Defective inheritance, (2) infectious disease, (3) accidents, and (4) unfavorable environment. Of these causes, unfavorable environment is by far the most important. In the majority of cases, according to Dr. Frankwood E. Williams, medical director of the National Committee for Mental Hygiene, "people are not born this way (mentally abnormal); they are made this way."

‡ Environment includes the following factors that influence the emotions: (1) Overly solicitous parents; (2) situations that repeatedly cause embarrassment (ridicule, shame, and similar emotions); (3) experiences that react unfavorably upon the shy and bashful child; (4) failure on the part of the child's parents and teachers to develop in him a realization of his responsibility for finishing tasks and for doing his part in the group to which he belongs; (5) purposeless day-dreaming; (6) side-stepping problems; (7) taking life apart instead of taking part in life; (8) competition without a reasonable amount of encouraging success; (9) mis-information about the miracle of life.

These factors do not work destructively in a single instant, as does an explosive; they work insidiously, slowly, day by day. Finally the time comes when only a slight disturbance is needed to force the emotional powers off balance.

¶ The chief function of mental hygiene is to see to it that the unfavorable situations mentioned above are reduced to the smallest number possible, and that, in their place, the child comes to experience cheerful and wholesome emotions. It is possible to develop emotional strength

as well as physical strength. But to do this there must be training, encouragement, achievement, self-confidence, social teamwork, and knowledge. The process of development is less spectacular, but in the end it represents a greater victory. There would be much less mental distress if more people would make these words their motto in life: "To look up and not down, to look forward and not back, to look out and not in, to lend a hand."

RR **Fears: logical and pathological.** The Greek philosopher, Plato, gave some excellent advice about fear. Plato's idea was that we should "learn to fear aright". There is nothing here about having no fear; the thought is that our fears should be reasonable, logical, rather than unreasoned, illogical, and even at times pathological. Fear is natural. It is the mother of safety. But when "our fears do make us traitors", as Macbeth says, we revert to a primitive condition that does not fit into the social scheme of this generation. We can no longer flee fear the moment we see it. We need first to face it, then to battle with it, if reason so orders. If discretion seems the better part of valor, we need to flee from fear.

RR There is wisdom in concrete fear. But there is none in abstract fears. Many fears that beset the mind of the emotionally unstable are abstract. They are intangible, chimerical, intractable. It is difficult to battle abstract fears, because one cannot clearly see what progress is being made. The more abstract a fear is, the greater is its mystery. Consequently, the greater is the need for mastering it. In the conflict with fear there should be the spirit that changes "zero hour" into "hero hour."

41 Children should be encouraged to master their fears, not merely because their fears may be ridiculous, but because they can do what other children have had to do. They can face their fears and conquer them. The hero

knows fear, as does the coward. The difference between the two is that the hero gives fight, the coward takes flight. There is a story of two young lieutenants, leading their platoons into battle, which illustrates the conquering of fear. One of the men was carefree and nonchalant; the other serious, tense and pallid. The first officer, noticing the apparent fear of his comrade, chided him for his fear of death. The retort was: "If you were half as frightened as I am at this moment, you would be running to the rear!" We may all show fear at times; none of us should ever show cowardice. Fear is reasonable; cowardice is treasonable.

♣ **Shyness.** One aim of training in mental hygiene is to develop self-assurance and to have it replace self-consciousness. Those who are highly self-conscious are seriously handicapped in making necessary professional, social, and business adjustments to their environment. An overdeveloped self-consciousness tends to make one diffident; situations that are enjoyable to others are to him embarrassing. Embarrassment prevents normal association with others and leads to solitude, introspection, a feeling of inferiority, and discouragement. The tendency to take part in life, to associate with others, is wholesome, natural, and helpful to the individual and to society. The tendency to examine life too curiously, to avoid association with others, is morbid, disquieting, and harmful to the individual and to society.

♣ Children ought to be helped in every possible way to think more *of* themselves and less *about* themselves. They should be taught to respect themselves and their abilities, and to project themselves into the world of action. If children are permitted to think about themselves increasingly, they become introspective, their world becomes smaller, their thoughts grow more selfish and

their activities less social. One of the most helpful ways to bring about a normal, wholesome, social-minded personality is play of the right kind. It should be purposeful, fair and square, social as well as physical.

✦ **Harmful mental habits.** Fretting has been very aptly compared with a rocking chair; it is comfortable, one can agitate all one cares to, but one gets nowhere. Fretting, fault-finding, making excuses, delaying action, postponing unpleasant duties even though they have to be done, and thinking things over without putting them over—all these are harmful mental habits. The stronger they become, the weaker becomes their master. And he becomes not only weaker but less efficient, less resourceful.

✦ It is necessary to train children in the right kind of mental habits. They must learn to apply themselves earnestly, studiously, and persistently to everything that they undertake. Emphasis should be placed upon the positive virtues.

✦ The child's mental problems should be handled much as his physical problems are handled. If a fallen tree lies across the child's path to school, he will either crawl over it or go around it when first he meets it. If, however, the tree is not too heavy, it is likely that the child will drag it out of his way on a subsequent trip, because he dislikes climbing over it and going around it every time he passes. In any event, the chance is that he will do something with the tree. The obstacle is a challenge.

✦ The child should be taught to meet his mental tasks in the same positive manner. Going around a mental obstacle may be the easier way to dispose of the situation, but the practice develops only a mental bypath. If many of these mental bypaths are formed, the mind's experience in life resembles the voyage of a rudderless ship. The mind is strengthened by working, not by shirking.

♥ **Developing mental stability.** The person who is so fortunate as to be blessed with a stable mentality is not only a source of comfort to his friends but also an asset to society. He is the so-called well-balanced person. He is characterized by the use of good judgment in managing the affairs of his life; he does nothing impetuously. The storms of life beat in vain against his personality; he ripens with the years.

♥ Primarily, the stable mind is the product of a fine inheritance. That alone, though, cannot be depended upon altogether, for during the early period of mental development the child must be intelligently guided. Intelligent guidance must be followed by persistent effort on the part of the growing youth to build a worthy structure upon the inherited foundation. Indeed, this persistent effort must be exercised throughout life if the well-balanced person is to remain so. The stable mind is never a product of chance.

♥ One main purpose of the mental hygiene movement is to see to it that the development of the minds and of the emotional controls of the children of today is not left to chance. Definite principles are being made known. These are for our use as teachers, for we must assume responsibility for the same, wholesome, balanced development of our pupils' minds. Chance is being eliminated from our educational program; it produces accidents, illness, mistakes, slipshod work, physical and mental abnormalities.

SOME SUGGESTED METHODS

Healthgrams

Loud acclaim the lad shall hear

Who resolutely conquers fear.

Think more of yourself and less about yourself.

"If you can't do what you like, try to like what you do."

Blackboard Work

1. **Fear in failure.** Explain that many failures are due to fear. This is especially true in athletics. The fear of missing the catch on a high fly ball may make the effort a failure. Fear in learning to swim leads to failure. Fear in climbing often results in a fall. Pupils will be able to suggest many ways in which fear paves the way for failure. Make the statement that fear is a part of failure. Bring out this idea by printing FAILURE on the blackboard, and striking through the letters F, E, A, and R,



Figure 50. The Most Common Cause of Failure

thus show that there really is fear in failure. (See Figure 50.) Emphasize the thought that there can be no failure without fear, and show that it is impossible to spell failure without using the letters in fear.

2. **Courage.** Have a spelling lesson on words that name some of the qualities children admire in their playmates; for example, strength, skill, speed, honesty, fairness, honor, health, intelligence, sympathy, friendliness, courage. The different qualities may be discussed if time permits. Raise the question as to what happens when O is left out of *courage*. Contrast *courage* and *cur-age*.

It is important to emphasize the thought that courage usually has to be developed, as muscle does. Some of the bravest people have all their lives been compelled to battle against fear. In itself, fear is no disgrace so long as we battle against it and master it.

3. **Success.** An exceedingly important element of mental hygiene is attitude. Children need to develop the success habit; they cannot do this unless they have the right attitude toward it. They must have confidence in themselves; they need to believe that they can do what they set out to do.


The above thought may be illustrated by printing AMERICAN on the blackboard. Discuss what it means to be an American. Teach the pupils to use as their motto the last four letters in AMERICAN.

4. **Superstition.** The superstitions of children are always interesting. Ask each pupil to make a list of any superstitions he may have. Go over the lists and without mentioning names discuss some of the superstitions and try to explain them. Be careful to embarrass no one.

Print the word SUPERSTITIOUS on the blackboard. How many are superstitious? Are they superstitious about the number 13? If so, show that there are thirteen letters in the word superstitious, and suggest that it must be an unlucky word to have in one's vocabulary. The teacher will be more successful in attacking superstitions with laughter rather than with serious arguments.

5. **The meaning of fear.** To the hero FEAR means Face Each Antagonist Resolutely. To the coward, FEAR means Fail Easily And Regularly.

The Tool Chest of the Mind

 A general discussion of tools and tool chests. A workman is known by his tools. A good workman knows his

tools. Talk about the care of tools, about keeping them sharp and in repair. Discuss the use of oil to prevent rust.

✧ **The mind is a tool chest.** It contains the tools with which man builds success and happiness or failure and misery. Imagine a carpenter who leaves his tools at home when he goes to work.

✧ **The tools of the mind.** Use sharpens mental tools, provided they are not used too much. Rest is necessary.

The hammer. The hammer may be used to represent will power. The mental hammer should not be used for "knocking" but for driving ideas into one's own and others' minds. Mental hammers must not lose their heads as some hammers do.

The T square. Everything in the workmanship of the mind should be squared up with what is right, honorable, and profitable.

The triangle. Substitute for it a *try*-angle and keep trying until everything is at a right angle.

The brace. This tool ought to be used often, when fitted with an "up" bit, especially if one feels inclined to falter or become discouraged.

The saw. This tool may be represented by persistency. Such a saw can cut through, almost anything. Avoid knots, such as unnecessary opposition. Use tact oil.

Chisels. These are useful for cutting away old ideas, superstitions, and useless or harmful habits.

The spirit level. One should safeguard against building a mental structure which leans dangerously to one side or the other. A plumb-line helps in this work, too.

The rule. A "twelve habit" rule is very useful. As a home assignment, have the pupils make a "twelve habit" rule on a strip of cardboard and on it write one good habit for each inch.

✧ **Material with which the mental carpenter works.** This

includes information that comes in through the special senses. Just as nothing should go in at one ear and out at the other, so should nothing go in at one eye and out at the other. Many people waste their material.

Men and women who have achieved. Name Washington, Lincoln, Napoleon, Milton, Beethoven, Florence Nightingale, Joan of Arc, Helen Keller. Explain that many of these people accomplished what they did in spite of handicaps. Milton's handicap was blindness; Beethoven's loss of hearing; Helen Keller's want of both sight and hearing. Not all these people had good material with which to work.

The key that unlocks the mental tool chest. Make a large key out of cardboard. On one side letter I CAN; on the other, I WILL.

Dramatization

Superstition hunted far and near
For a talisman to appease his fear.
While Common Sense in reason oft did find
Security from bogeys of the mind.

Teachers have been quick to see the opportunity school dramatics offer for teaching principles of health and safety interestingly. Health plays are helpful in the classroom, in the school assembly, and at the parent-teacher meeting.

There are two ways of presenting a health play.* The first is to have the story of the play read by one of the characters, and the action pantomimed by the others of the cast. This is the easier way. No one has to learn

*The Bureau of Education, Department of the Interior, Washington, D. C., publishes a special bulletin on health dramatics which is very helpful in this work. It contains many valuable suggestions and a good bibliography. This pamphlet, known as *Bulletin No. 13: Dramatics for Health Teaching*, may be obtained at a small cost by writing to the government bureau mentioned above.

any lines; it is only necessary that players know how to pantomime. This type of play presents no special problem to pupils. They do not worry about forgetting their lines. They are not embarrassed by having "to appear in public". Nevertheless, if the experience is a new one, it really does give pupils some preparation for their later appearance in plays of the other type.

The other way is to read the story of the play and to discuss it with the class. Then either ask for volunteers to try out for the different parts, or ask the pupils to make suggestions as to who shall play the various characters of the story. After the parts have been assigned, have the pupils copy their lines and begin memorizing them. The teacher should be very tactful in making corrections and in criticizing the players; otherwise she may cause them to lose confidence in themselves. The chief value of the play is to teach health principles to the players and audience, not to do fine acting.

The following outline suggests a way to use the pantomime method.

The Conquest of Fear

Scene: A living room. A table with a book on it. A chair near the table.

Action: A boy enters the room, drops bat and glove on floor, and sits down, rather heavily. He is tired from a hard game of baseball. It is evening. He has a few minutes for rest before dinner, so he picks up a book. He turns idly through it until a story, *The Conquest of Fear*, catches his eye. Then he decides to read it. As he reads, the following action is put on as though it were a vision of what the boy sees.

Pantomime: Boy enters room, looking about as though in fear of something. Shakes his head as he hears his father's voice telling him to go to bed because there is

nothing to fear. Says that he, too, used to be afraid. when a boy, but that he fought his fears and found that they were only imagination, ignorance, dreams, and cowardice.

The boy throws out his chest and manfully starts for the door to his bedroom. He hears a moaning sound (the wind) coming from his room and a moment later Fear comes out of the room. (Fear is represented by four boys. Each has a sheet thrown over his head. A large rubber balloon with a face painted on it is tied on for a head. Underneath the sheet each boy carries a placard bearing an inscription. Inscriptions given later. The four boys come out in line formation, each with his hands on the back of the one in front of him.) More moaning sounds.

The boy trembles visibly and shows fear. Calls to his father that he is afraid. Father calls back to him, "Be brave, my boy. Don't show the white feather."

The four figures representing Fear surround the terror-stricken boy. Each figure points a finger at him. He hides his face in fright. The Fear figures shake with laughter.

The father calls again. "Be a man, son. Go to bed."

Suddenly the frightened boy straightens up. He doubles up his fist and strikes one of the balloon heads. It bursts. The headless body wanders about aimlessly.

In quick succession the boy strikes the other heads. Each bursts. Soon the Fear figures are on the floor.

The boy examines the headless figures in turn. From beneath the sheets that cover the figures he pulls placards bearing these inscriptions: I am Bluff. I am Ignorance. I am Imagination. I am Cowardice.

The boy carries the placards to the front of the stage, shows them to the audience, and pantomimes his surprise

at seeing what Fear is really made of. Meanwhile the four headless figures crawl from the stage.

Again the father's voice is heard asking whether or not his son is in bed. With a rush the boy runs out of the room and into his bedroom.

Father and mother enter, look into the bedroom, and see their son in bed. He calls them and tells them he is no longer afraid of the dark.

Father, mother, and son (who went to bed with all his clothes on, except his shoes), advance to the front of the stage. The boy then tells how fear is made of ignorance, imagination, cowardice, and bluff. Parents agree with the son, and advise him to fear only one thing, the fear of fear.

It is the evening before the boy's birthday. Because he has conquered his fear his parents give him a watch. He looks at it, discovers how late it is, gives a shout and hurries off to bed again. The next day he is to pitch in a baseball game to be played by the "Stronghearts." Every member of that team has won the coveted letter "S" and each one is pledged to wear it. The other boys would never have given one of the team's letters to Dick, the hero of the play, had they known about his fear of the dark.

Just then the dinner bell sounds. The reader of the story jumps from his chair, closes the book with a bang, and leaves the room, remarking as he leaves, "I hope I'm as brave as that boy in the story. The next time something frightens me in the night, I'll give old Fear a knock-out blow right on the head." As he passes through the doorway, he shows how he will do it.

SUMMARY

♣ The present interest in mental hygiene is one of the most significant activities undertaken by social workers

within recent years. The field of study includes the childhood of the individual under consideration, his parent-hood and ancestry. Further, it includes the future parent-hood of the subject, and the childhood of his descendants.

A study of any individual's development reveals those instances where his emotions failed to meet the crises to which they were subjected. The object of students of mental hygiene is to profit by mistakes of those who have failed, and so smooth the path of others who have yet to undergo the strains of emotional crisis. The investigations of the mental hygienists aim to make it possible for people at large to avoid the mental strain caused by worry, shame, embarrassment, fear, jealousy, revenge, introspection, and indecision.

One of the most useful instruments in the hands of the mental hygiene worker is the intelligence test. By means of it he is able to obtain the intelligence quotient (I. Q.), or intelligence rating, of the subject. Unfortunately the mental hygienist has as yet no method of determining that other highly important element of every individual's mentality, his emotional rating. We can as yet judge the emotional stability of an individual only imperfectly. Only in a general way does ability to meet the emotional strains of today indicate what the individual will do under those of tomorrow. Any person may be close to the emotional breaking point without that being suspected even by those most intimately associated with him.

We get an insight into an individual's balance not only by the emotional adjustments he makes, but also by the way he makes them. Teachers should be on the watch for pupils who react to social situations in an unusual manner. Significant symptoms of emotional instability are undue sensitiveness, introspection, moodiness, temper tantrums, and day-dreaming. Inability to complete under-

taken tasks, or unwillingness to do so, and an unwarranted diffidence or shyness are also indicative of emotional instability. If such cases are taken in hand, they can be started on the right path at the outset. If the symptoms are not given early attention, those who are afflicted with them will have great difficulty in making their way through the emotional crises that are certain to confront them at some period of their lives.

Some Questions for Consideration

1. It is said that morale won the war. How does morale affect the school child? What can the teacher do to raise the child's morale and build up self-confidence?

2. "Letting off steam" is generally believed to be a necessary and valuable measure for pent-up emotions. What constitutes a sane way to "let off steam"? What constitutes a harmful way of securing the same emotional result?

3. How can the teacher safeguard her nervous system from the strain of her work?

4. What, in your judgment, are the chief worries of a child? In what way, if any, do they handicap him in his school work, in his association with other children, and in his health development?

5. Do you think that the philosophy of the fatalist is a good solution to the problem of worry? If not, what constitutes a better solution?

6. Is worry ever a constructive force, or is it always destructive?

References for Further Reading

- Beers, C. W., *A Mind That Found Itself*. (Longmans, Green and Company.)
- Blanton, M. G., *Training the Child to Obey*. (American Medical Association, 535 N. Dearborn St., Chicago, Ill.)
- Richards, E. L., *Protecting the Mind of Childhood*. (American Child Health Association.)
- Richardson, F. H., *The Nervous Child and His Parents*. (G. P. Putnam's Sons.)
- Walton, G. L., *Why Worry?* (J. B. Lippincott and Company.)
- White, W. A., *Mental Hygiene*. (The Macmillan Company.)
- Literature published by the National Committee for Mental Hygiene, 370 Seventh Avenue, New York City.

CHAPTER XVI

"PLAY'S THE THING"

Work and play. Why are the words "play" and "work" sometimes applied, by different persons, to the same activity? Why does the work of a gifted mechanic, which may seem to us greasy drudgery, appeal to him as "fun," or "play"? Why does a little child helping to wash dishes look upon it as play, only to grumble over her "work" when washing dishes becomes her responsibility?

Psychologists have decided that the individual's point of view determines the answers to all of these questions. Both of the words imply activity. The idea back of "play," however, is pleasure or amusement; behind "work" appears labor, and sometimes toil or drudgery.

The psychologist's problem is to discover how we may so influence and control our attitude that our physical activities chiefly give pleasure. In short, they are trying to discover how work may be made joyous. Man must work. And society would like to make man's working hours shorter, easier, and happier. More play spirit in the individual's efforts means added stimulus to increase output and to improve its quality, for in play, the individual usually does his best.

This chapter considers the relation of play to work, and also the relation of these to two of life's greatest needs: (1) The need for keeping in fit condition; (2) the need for fitting into conditions. It is now generally agreed that a properly directed play spirit is of great value in an individual's education.

The need for exercise. Life and exercise are inseparable. Through exercise we get our mental, moral, and

physical growth. The world has been pushed forward as the result of man's exertions. Except for essential physiological activities such as breathing, the action of the heart, and other life-giving functions, the first form of exercise in human activity is play. So far as is known, all creatures play before they work. Play is natural; work is artificial. It is likely, however, that Nature intended the child's play life, his dream world, to carry over into his work life, his world of reality.

This is the case in the animal world. The kitten plays at catching a mouse. As a cat, it carries out the same play program in actually catching its prey. In the first instance, the action is instinctive and gives emotional satisfaction. In the real business of mouse catching the cat apparently experiences as much emotional pleasure in its work as in its earlier play. For the cat, mouse-catching as work does not exist; it is still play.

Some form of exercise is essential to life, and to progress. Anatomists declare that function makes structure. This means that the muscle which has something to do grows in size and strength. On the contrary, muscles that are unused, the muscles of an arm kept in a sling, for example, weaken and wither. Exercise means growth.

Play in life's curriculum. A good program of physical education includes calisthenics, gymnastics, athletics, corrective work, health supervision, and work with handicapped children. But even all those items alone do not make a good physical education course. For just as a well-balanced ration must include fats, carbohydrates, minerals, and other essential substances, and, in addition, vitamins, so a physical education program must include the activities mentioned, and also play. Without play, no one can have a normal physical body. This has been well expressed by Dr. Luther Gulick, a leader among Ameri-

can teachers of physical education, in this statement: "If you want to know what a child is, study his play. If you want to affect what he shall be, direct his play."

A play program is the very backbone of the modern physical education course. And just as any backbone must be strong and flexible, if it is to be serviceable, so, too, must this. The program of play must be flexible enough to fit into the constantly changing conditions of the modern educational program. It must be strong in making provision for all activities that will promote the idea of fair play among pupils. Further, it must develop the sense of courage in children, and so train them to withstand opposition.

The program of health instruction serves best if it is more largely based upon play than upon formal instruction. Educational leaders are coming to recognize this, and they are consistently making use of organized, directed, purposeful play. The play program in the classroom carries over into the playground at recess and after school. It improves individual and group morale, and it creates class and school loyalty. Organized play develops an interest in health. It socializes the individual and helps to lay the foundation for self-reliant, healthy-minded, law-abiding, fellow-serving citizenship.

Need for directing play. Through ordinary play, children commonly get enough exercise to satisfy their physiologic requirements, because ordinary play is instinctive. The teacher's chief task is to direct the child's play activities into proper channels. There is no need for stimulating the normal child to take part in play. Childhood is almost synonymous with play. The need is for direction.

In a general way, the child knows how to play, but he does not know what to play so as best to promote his physical, mental, social, and moral welfare. Indeed, he is

not even interested in such matters. It is the teacher's part to interest children in choosing the right kind of play and in playing the right way. It has been charged that schools teach children, but that playmates give them their education. This challenge must not go unheeded. The child's education should continue on the playground and after school; it should not be merely a matter of five hours in the classroom. At recess time and at other times as well, the playground must serve as an educational medium, as does the classroom.

Play may be an asset or a liability. Properly directed and organized, play can be made to serve an invaluable purpose. If poorly handled or left to develop alone, it may easily counteract the best teaching of classroom, home, and church. Play spots must not be permitted to become plague spots because we are disinclined to assume responsibility; play must be made a means of fitting the child into society as well as a means for putting him into fit physical condition.

The physical value of play. The development of the body and of bodily, or organic, vigor largely results from physical activity. The removal of diseased organs, of the tonsils, for example, does not develop organic power. It is simply a defensive measure. Physical activity is a positive process in organic development, and because youth is the time for the growth of the body and the development of organic vigor, play is rightfully given an important place in the child's life. Consequently the play of children should be recognized as creative, whereas that of adults is recreative.

The educational value of play. "Activity is the sole means of education." The child learns by doing, feeling, and thinking—and in that order. Professor C. H. McCoy has stated that "man is not a muscle, but a neuro-muscu-

lar unit." Play develops the child not merely in a physical sense, but in a mental sense as well. School and playground must be made to serve as the laboratory for the child's all-round development; he must there develop mentally, socially, and physically. The play of the mind is an important factor in the child's mental development. Games and dramatics, rhythmic activities, and formal classroom instruction actively stimulate his mind. In all these activities, the three cardinal principles of education—doing, feeling, thinking—operate constantly.

The social value of play. The majority of children are socially normal. There are unfortunately a few who find it difficult to meet their social obligations. Although they are physically fit, they do not find their proper place in the social structure.

Play is the desirable requisite needed to bring out the possibilities of children. In play, the individual must subordinate himself to his environment; he must fit into the scheme of things. In this respect, play resembles work, for the workman must subordinate himself to the demands of the materials with which he labors. The play of children is, then, just as much a part of the social machinery as is the work of men. The one is as necessary as the other.

Sportsmanship. The poet Goethe said: "Talent is developed in quietude; character is formed amidst the world's turmoil." Sportsmanship, an aspect of character, is also developed in the turmoil of the world—of the child's play world. Sportsmanship means more than observing the written rules of the game; it means also observing the unwritten rules of fair play. Sportsmanship is a concern of the spectators as well as of the players. Sport without sportsmanship has no more place in a society based upon ethical principles than has work without workmanship in such a society.

Youth's greatest enterprise. A significant educational advance is the growing appreciation, especially on the part of educators themselves, that the chief enterprise of the child is action. This is especially true of action that takes the form of play.

H. S. Curtis characterizes play as "the most perfect democracy." Teachers are responsible for aiding the child to achieve citizenship in that democracy. By doing what they can do to make the child happy and healthy in his childhood days, they make him ready to shoulder the responsibilities of citizenship in the great American democracy, even before he is called upon to assume the obligations of adulthood.

SOME SUGGESTED METHODS

Sportgrams

Make a clean stand for clean standards—everywhere.
Stand up for clean sport—even when you are sitting down.
The worst misplay in any game is to be unsportsmanlike.
Clean sport is more than a matter of soap and water.
A clean sportsman is never a mean sportsman.

Blackboard Devices

The following suggestions deal with the general theme "Sportsmanship," which is an important consideration in all games and athletics. One of the active organizations of this country, organized to promote fair play, is the Sportsmanship Brotherhood, Inc., of New York City. Its object is to foster and spread the spirit of sportsmanship throughout the world.

1. **What it means to be "on the level."** Have the pupils express their notions of what it means to be "on the level." Follow the discussion by printing the word **LEVEL** on the blackboard. (See Figure 51.) Explain that a boy who is fair and square in his sport, work,

studies, and other activities is something like the word LEVEL. Whether you begin at left or right, the letters L, E, V, E, L spell the word. The boy who is honorable in his athletic and other interests is always the same. It makes no difference whether or not he knows you are



Figure 51. "On the Level"

watching him; he is always the same kind of sportsman—"on the level." He is level on every side.

2. Answer this with "yes." Print the word square on the blackboard thus: ? S Q U A R E. (See Figure 52.) Call attention to the question mark at the left end of the

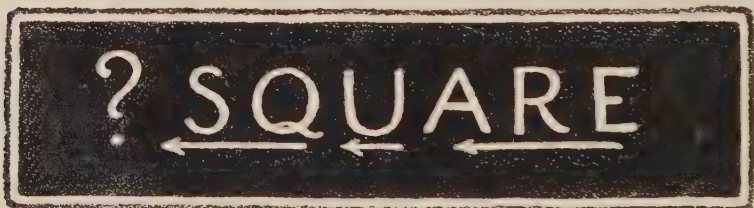


Figure 52. An Important Question in the Game of Life

word. Ask pupils to explain its position. Explain that, as printed, the word itself is a question. Bring out the idea by underlining first, ARE, then U, and last SQ, which stands for square. Reading from right to left, the letters ask ARE U SQ? Emphasize the thought that every time we see or hear the word square, it ought to be a challenge to us to be ready to answer, "Yes."

3. **"Getting even" is unsportsmanlike.** Print the word REVENGE on the blackboard. Show that you can get nothing out of it except EVEN. Underline EVEN in the word REVENGE. The boy who gets even in a race never wins; the best he does is to make it a tie. A better way to get even is to get it out of the score, that is, to win by a good margin of points; for example SEVEN runs or goals. You can get even in this way without resorting to revenge, or any other unsportsmanlike measure. Make this point by underlining EVEN in SEVEN. Those who want to get still greater satisfaction for a previous defeat may play harder and win by a margin of ELEVEN points. If eleven points are not enough, there are other scores at which to aim. Pupils will be able to name some of those and will enjoy doing so.

4. **Sportsmanship pledge contest.** The purpose of a Good Sportsmanship Pledge is a statement that will find lodgment in the mind, the heart, and the actions of the athlete. This statement should put him into the proper attitude toward games and sports; that attitude should help to raise the physical, social, and moral standards of group competition to the highest possible level.

The aim of any contest of this nature is not alone to discover which school can produce the best pledge. It is also to stimulate a general interest in the highest type of sportsmanship; indeed, this is the chief value of the contest.

Each teacher should first explain in a general way what the ideals of sportsmanship are. She should then ask her pupils to write a pledge embodying those principles. The pledges are then read and discussed in class. Finally a class pledge is constructed. This embodies all that is best in all the pledges that have been submitted. The teachers of the school, acting as a group, may then decide

which of the class pledges submitted is best. That may then be offered as the school pledge.

In judging the pledges offered, the following points should be considered: (1) Content, which should deal with the spirit and ideals of games and athletics not only from the point of view of the competitor but also from that of the spectator; (2) brevity; no more than fifty words; (3) originality; and (4) simplicity.

Pageantry

The pageant has much to recommend it as an ideal method of presenting health topics on a broad scale. It combines color, beauty, action, and impressiveness. These are important considerations when it is desirable to demonstrate the different phases of a health program appealingly. Health needs to be associated in the minds of people with joy, zest, enthusiasm, strength, agility, grace, beauty. It should be synonymous with life.

The pageant serves five important ends:

1. It brings together in one program the largest possible number of those agencies, which, inside and outside the school, are working for the health and safety interests of school children.

2. It serves as a health project for the whole school system. Each division of the administrative staff works out the problem of its own relation to health and safety, and also the problem of its relation to all other divisions in the common effort to further the health and safety of the pupils in the entire system.

3. It stimulates the pupils themselves to an interest in health: (a) By having them engage in contests to select a general theme for the pageant and to work out health and safety creeds; (b) by having them work at the dramatization of the various episodes of the pageant.

4. It creates a background for subsequent health instruction and practice such as will result from lessons taught in the pageant.

The following outline is that of the pageant "Mariners All," which was presented by five thousand Baltimore school children to an audience of some fifty thousand parents. The pageant was staged in the city's municipal stadium, and was a great success, not only in the presentation but also in the effect it had in stimulating health teaching and an interest in health. The outline is given here merely to show what can be done by a school system whose members work together wholeheartedly toward the achievement of a single aim.

A Pageant: Mariners All

Processional

The waves. A line of girls, dressed in white, in single file. They dance forward and then, at intervals, backward, advancing all the time. By means of the white scarves which they wave above their heads, they represent the surf as it rolls upon the beach and finally hurls itself headlong against the rocks of the shore. This representation adds much to the total effectiveness of the processional.

The tide of humanity. A great crowd of children march en masse. They wear white caps with blue borders. About their shoulders and extending down their arms they wear blue-bordered white towels. As they march, they alternately raise and lower their towel-covered arms. This action represents the movement of water and gives the effect of an undulating sea of blue and white.

The ships of education. Floats are made to represent Viking ships, the Mayflower, old-time men-of-war, and

other interesting types of vessels. These are carried and made to move along by children concealed within the cloth-covered framework. In producing these floats there is great opportunity to make the total effect of this part of the pageant very colorful by adorning the sails of the ships and decking the rigging with flags and pennants.

Episode I: The sea of humanity

This episode consists of a towel drill by all the pupils.

Episode II: The voyage of "Scholarship"

"Stern men with empires in their brains."

In the center of the stage is a rock where dwells a siren. By devices, which include dancing, playing beautiful music, offering jewels, and by means of other seductive intrigues, she entices the sailors of the various ships. It is her plan to wreck the ships upon the rock that is her dwelling place. Some of the ships steer clear of the rock. Others that approach near to the siren finally escape and go their way safely.

Sailors discover the Pierian spring. When the ships finally reach land, the sailors leave them, come upon the shore, and there witness the Dance of Knowledge which is executed by a group of pupils who make their appearance from among the pages of huge books. The dance finished, the sailors board the ship "Scholarship," which then sails away to carry knowledge to every part of the world.

The sea gulls. During the latter part of this episode, and in a number of subsequent episodes, a number of girls dressed in white and carrying white scarves dance about the ship. These represent the sea gulls that commonly accompany incoming and outbound ships while they are yet near the shore.

Episode III: The voyage of "Sportsmanship"

"When the Great Scorer comes to mark against your name,
He writes not that you won or lost, but how you played the
game."

This episode includes a parade of sports. It gives an opportunity for colorful pageantry in portraying the various sports—baseball, basket ball, football, tennis, and all others in which school children commonly take part. Following the parade of the sports, the entire groups of pupils may march about, salute the Flag of Good Sportsmanship as they pass it, then take a Good Sportsmanship Pledge,* of which the following is typical:

We pledge allegiance to our country and the clean sports-
manship for which she is striving. We pledge ourselves to
play fair in all games, and to obey the laws of health, to the
honor of ourselves, our school, and our nation.

After all the participants have taken the Good Sports-
manship Pledge, the Good Sportsmanship Trophy is for-
mally presented. Then the ship "Sportsmanship" sails
away, carrying the ideals of good sportsmanship to young
people in every part of the world.

Episode IV: The voyage of "Friendship"

"A mystic bond of brotherhood makes all men one."

This episode opens with flag signals in which pupils transmit the message, "A friend in need is a friend indeed." The episode also includes a Dance and Chain of Friendship. It concludes with the departure of the ship "Friendship," carrying good will to every part of the world.

*The Good Sportsmanship Pledge used in this pageant and reprinted here was prepared by the pupils of Public School No. 10, in Baltimore, of which Miss Mary C. Kerr is principal.

Episode V: The voyage of "Seamanship"

"He that wrestles with us strengthens our nerves and sharpens our skill."

"Seamanship" may be represented by a reproduction of an ancient Viking ship having the shields of the seafarers hung along the sides. Pupils carrying large pieces of blue and green cloth walk along at either side of the ship. They move these rapidly up and down to represent the waves during the storm. Other pupils carrying strips of yellow cloth above their heads dart in and out among those who represent the waves. Still others represent rain. Appropriate music is played throughout the entire episode. During the storm the mast of the ship falls. After the storm comes the calm. Sunshine, which follows, is represented by appropriately costumed children who do a sprightly dance. Rainbow is represented by another group of dancing children appropriately costumed. The storm is safely weathered, and at the conclusion of the episode the ship "Seamanship" sails away with Courage at the helm.

Episode VI: The voyage of "Worship"

"God's in His heaven,
All's right with the world."

This episode is based upon a painting, "The Angelus," by Jean Francois Millet. A passenger on the good ship "Worship," who is an artist, leaves the ship to come upon the stage and pantomime the painting of the picture. The picture itself is portrayed by two pupils dressed as French peasants. The Angelus bell rings, the peasants bow in prayer, and then move off the stage. The artist then returns to the ship "Worship," which then sails away.

Episode VII: The voyage of "Marksmanship"

"To look up and not down; to look forward and not back; to look out and not in; to lend a hand."

A huge (stage) cannon is taken from the ship "Marksmanship" and set up ashore. Inside it are three boys who represent cannon balls. Across the field are three targets, each made of paper tacked to a large frame. Each of the three times that the lanyard of the cannon is pulled, a boy representing a cannon ball runs forward from the mouth of the gun, races across the field, and dives headlong into one of the targets. This releases a group of pupils representing, for the respective targets, Happiness, Strength, and Health. These run out onto the field, dance, tumble, and group themselves in pyramid formation. The ship "Marksmanship" then departs carrying high ideals to all the world.

Episode VIII: The voyage of "Workmanship"

"In the elder days of art,
Workmen wrought with greatest care
Each minute and unseen part;
For the gods see everywhere."

This episode shows a parade of the trades, which, like the parade of the sports in Episode III, offers an opportunity for colorful pageantry. It includes a portrayal of the Ladder of Success consisting of pyramid formations on ladders held by pupils. At the conclusion of the episode the ship "Workmanship" sails away, carrying the Nobility of Labor to every part of the world.

Episode IX: The voyage of "Partnership"

"I shall know that your good is mine; ye shall know that my strength is yours."

The episode opens with some sailors engaging in sports.

These include a shoulder-to-shoulder marching drill. Following that there should be a portrayal of the Community Chest and of the Dance of Gold and Silver. The latter is shown by children who carry large hoops covered with gold or silver paper representing gold coins. During the dance these are deposited in the community chest as a symbol of partnership. The episode concludes when the ship "Partnership" sails away carrying the Spirit of Civic Coöperation to every part of the world.

Episode X: The voyage of "Protectorship"

"Aggressive fighting for the right is the noblest sport the world affords."

Sailors from a ship come ashore and do the Flamborough sword dance and the sailor's hornpipe. This may be followed by an exhibition of tumbling. The conclusion of this episode offers opportunity for an excellent and attractive piece of dramatization—a Battle with Pirates. When the sailors have finally been victorious, they go aboard the ship "Protectorship," which then sails away to uphold right in its eternal conflict with might.

Episode XI: The voyage of "Citizenship"

Recessional:

"Thou, too, sail on, O Ship of State
Sail on, O Nation, strong and great."

The last act of the pageant shows a Dance of all the Nations. A tableau concludes the act. In the tableau, children properly attired arrange themselves so as to represent the American flag. Finally the ship "Citizenship" sails away, carrying Love of Country to every nation.

Community singing. During the final tableau the spectators and the participants in the pageant join in singing one stanza of "The Star-Spangled Banner."

SUMMARY

How can we put the spirit of wholesome play into the lives of children and adults, so that it affects not only their play activities, but their work activities? This question is facing all of us. It is especially important that teachers should try to answer this question in planning the place of directed play in their health program.

In connection with the health program, the teacher cannot act more wisely than to acquaint herself thoroughly with modern ideas and ideals of play. She should learn as much as possible about the practical administration of a play program, and about the relative value of personnel and equipment in making that program effective. She should think of herself as conducting a laboratory where the aim is to develop human plants so that they will become hardier and finally bear better fruit.

The child's play day and his play age should be lengthened as much as possible with the hope and expectation that the result may be happier and healthier children. Play should result in more wholesome relationships between boys and girls. It should train children so that they may better control the emotions of anger, hatred, fear, and self-pity. Alone and of itself, play does not always result in these ends. It will only do so when it consists of the right sort of activity conducted under proper conditions.

In order better to train themselves as play leaders, better to promote play facilities, and better to apprehend the possibilities of properly directed play, teachers should ally themselves with the Playground and Recreation Association of America, a national organization whose membership includes many of the best qualified play experts in the country. Teachers who do not care to

become active members of this association should at least acquaint themselves with the official publication of the organization, a monthly bulletin known as "The Playground."

Some Questions for Consideration

1. It has been said that where there is room to think there is room to exercise. If this is so, is there any excuse for not giving physical exercise regularly and frequently, regardless of the available play space? Suggest exercises that may be advantageously given in a classroom.

2. How do you distinguish between natural and artificial exercises? Give an example of each. Discuss the merits of the two kinds of exercise.

3. How important do you consider play in the life of the child? Someone has said that "play is to the child what prayer is to the soul."

4. What are some of the desirable by-products of play? Can these be increased or new ones added by means of organized play?

5. The Women's Division of the National Amateur Athletic Federation, New York City, is urging athletics for girls that is anatomically, physiologically and psychologically suited to them, rather than a replica of boys' athletics. At about what age do you think boys' and girls' athletics should be differentiated, and in what respects?

References for Further Reading

- Bancroft, Jessie H., *Games for the Playground, Home, School and Gymnasium*. (The Macmillan Company.)
- Bowen, W. P. and Mitchell, E. D., *The Practice of Organized Play*. (A. S. Barnes and Company.)
- Curtis, H. S., *Recreation for Teachers*. (The Macmillan Company.)
- La Salle, Dorothy, *Play Activities for Elementary Schools*. (A. S. Barnes and Company.)
- Lee, Joseph, *Play in Education*. (The Macmillan Company.)
- Games and Equipment for Small Rural Schools*. Physical Education Series No. 1, Bureau of Education, Department of the Interior, Washington, D. C.
- Literature and monthly bulletin of the Playground and Recreation Association of America, 315 Fourth Avenue, New York City.
- May Day Festival Book*. American Child Health Association, 370 Seventh Avenue, New York City.

CHAPTER XVII

LETTING GO

The place of rest in life. Rest is as essential to the living process as is food, or drink, or air. True, the need for rest is not so immediately urgent as the need for food, drink, or air, but Nature as inevitably demands rest as she demands any of these other necessities, and must get it if life is to continue.

Today Nature contends with conditions that differ greatly from those which surrounded early man. The physiological devices that safeguard man's need for sleep now operate with far less success than formerly. Life is nowadays more intensive. The mind of man is burdened with emotional strains that were unknown centuries ago. Today the demands of life often make it necessary to deny the body the regular rest it needs.

The environment of the modern man stimulates him and creates a false feeling of alertness. This tempts him to draw upon his physical reserves in a way that defeats Nature's all-wise provision for his physical and mental restoration through rest, relaxation, and sleep.

Just as a tourniquet is needed to prevent the loss of one's life blood from a severed artery, so, too, is there need for some arrangement that will prevent the reservoirs of vitality from being drained by over-exertion. Rest does this, for it truly restores the body. It is one of the wise provisions of Nature.

The need for rest. In these times of strenuous living it is highly essential that we give intelligent heed to the need for rest, relaxation, and sleep. In athletic games, rest periods are provided; it is likewise as important that

those who struggle in the game of life make provision for rest periods.

Most present-day employers are convinced of the need for rest periods in the employee's working day. They have learned that these rest periods increase the worker's output and favorably affect the quality of his product, and that they decrease the hazard of industrial accidents. Educators know that rest periods in the classroom freshen the minds of pupils, relieve their tired muscles, revive interest, and improve discipline.

The forms of rest. Scarcely any two people take their rest in exactly the same manner. That which one person calls rest may be considered work by his neighbor. A third person may call it recreation, and another may regard it as study. Some people rest by doing nothing; others rest by doing something new. To be truly beneficial, rest must be suited to the needs and likes of the individual. Rest must not be forced upon us by others. The child who goes to bed because he is tired obtains more rest than the one who goes to bed rebellious because clock and parent, not his physical requirements, send him.

We recognize rest by the effect it has upon us. Usually we do not have to struggle to rest. Rest is largely a mental matter. The mind must be at peace with itself and with the world. The body must be comfortable. The important thing is not so much what we do in order to rest, but what effect rest has upon us.

The theories of sleep. Theories of sleep are more interesting than instructive. Some attribute sleep to certain conditions of the circulatory system which cause a congestion of the brain, while others believe it to be due to anemia of the organ. Other theories say that an intoxication of unknown nature, probably the result of tissue wastes, affects the circulation. This theory is to some

extent borne out by experiments which were conducted at George Washington University. The distinguished Swiss scientist, Claperede, contends that people do not sleep because they are poisoned or exhausted, but in order not to become so.

Attempts have also been made to explain sleep on the basis of psychology. Dr. Boris Sidis, of Harvard University, has shown that sleep may be self-induced by limiting voluntary movement, closing the eyes, and limiting the field of consciousness. It may also be induced by monotony. Hypnotism lends some support to the psychological theory.

We are interested to discover the cause and significance of sleep because we normally devote about one-third of our life to it. In the aggregate, that is a tremendous amount of time. We can ill afford to spare so much out of a lifetime that is all too short unless the time spent in sleep is necessary to our health, happiness, and strength.

If it can be proved that sleep is not only a necessity, but also a luxury, as some scientists contend, then we shall profit by learning how we may dispense with that luxury. The time gained by doing so may then be devoted to enterprises of a more remunerative character. If, for example, we can give greater depth to our sleep, we may be able to curtail the length of it and yet obtain the same mental and physical results.

Some people undoubtedly sleep "faster" than others. During sleep their bodies recover more quickly than is ordinarily the case. The research now being carried on is likely to throw some light upon the phenomenon of sleep. Until new facts are discovered, however, each of us should study his own habits of sleep by testing himself as to the amount needed. The best test of the adequacy of sleep is the feeling one has upon waking.

The three R's for rest. Relaxation, recreation, and reflection, each acting in its own way, have a restful effect upon mind and body. There should be more time for these. Rest from physical and mental strain is the primary requisite for those who wish to lead truly well-ordered lives.

People who want to keep their grip on life should learn how to "let go" and relax as occasion permits. They should never wait until occasion demands. This is especially true of teachers. They continually deal with every kind of personality in the classroom. Most of them feel the need of being on the alert every moment they are before their pupils. Enthusiasm is needed for stimulating a class; nervous tension is required for maintaining enthusiasm. One of the teacher's most important needs is an opportunity to relax, to "let down" a bit, to find repose for her tired body. Not only the teacher, but also the business man, the professional man, the unskilled laborer, everyone, in fact, ought to give more heed to the importance of relaxation.

The need for recreation in the daily life of adults is constantly kept before the public. Magazines and commercial advertising do not allow this need to be overlooked or forgotten. The granting of vacations to nearly all employees, the outdoor community activities taking place in nearly every town and village, the increase of time for leisure, and the nation-wide interest in sports and physical exercise have contributed to the popularity of the recreation idea. Outdoor sports and other activities become increasingly popular each year. There is no lack of quantity of vacation time and activities; there is, however, some lack of quality, for much of the vacation time could well be spent to better advantage than at present. A change in outlook is always valuable.

The old Roman emperor-philosopher, Marcus Aurelius, centuries ago gave to the world the maxim: "Our life is what our thoughts make it." Reflection readjusts our mental focus on life. It brings peace to mind and body. It gives us a new sense of values; one of them is rest.

The health values of rest. One of the first principles of medical practice is rest. The fever patient should be in bed—resting. In treating a cold, rest is as essential as medicine. The tubercular patient needs rest as well as nourishing food, fresh air, and medical attention. The fractured arm requires rest as well as supporting splints. The undernourished child needs rest as well as food, correction of physical defects, and correct habits of life. Rest is necessary for halting the progress of disease.

Let us keep in mind the importance of rest, not only for maintaining the body in health, but also for helping to restore it to health.

SOME SUGGESTED METHODS

Healthgrams

Sleep is to a man what winding-up is to a clock.

Sweep the cobwebs out of the mind with sleep.

"Must we to bed? Indeed! Well, then, let us arise and go like men."

Sleep longer if you would be stronger.

Rest your head in bed, not in school.

Blackboard Devices

1. **How long do you sleep?** The following devices are effective for making it easier for pupils to remember what has been taught about the number of hours of sleep they should get. The lesson is usually discussed about the home dinner table and in consequence it often affects the parents' attitude toward the importance of sleep for building up the child's health and strength, as well as for increasing its growth in height and weight.

Ask the pupils how many hours of sleep they get. Does anyone say *eight* hours? Print the word EIGHT on the blackboard, and by printing FR before it show that the boy or girl who gets only eight hours of sleep is liable to be a slow FREIGHT. Does anyone answer *nine* hours? Print the word NINE on the blackboard. Change the N to M and remark that *nine* hours is fine for *mine* but not for *thine*. Does anyone answer *ten* hours? Make the point that *ten* is very good, provided that it is OFTEN. Does anyone answer *eleven* hours? *Eleven* (hours of sleep) is good for *seven* (years of age).

2. **A heap of sleep.** Have each pupil cut out a circular piece of yellow paper about two inches in diameter, then print on it his initials and the average number of hours he sleeps. Pupils should then go to the blackboard one at a time and paste their sleep records on it so as to make a heap of sleep. Leave this material on the blackboard for a week or two, and refer to it occasionally; for example, when children are sleepy in class, when they are late to school in the morning, when they are inattentive.

The teacher may find it desirable to make a second heap of sleep to represent the amount of sleep that ought to be added to the first heap in order to make it large enough. She should remember that children are often sleepy in school, not because they need more sleep, but because they need more fresh air in the classroom. They may need a setting-up drill to rest their tired bodies and brains, or they may even need a more interesting presentation of the lesson. Sometimes children who are tired need more nourishment rather than more sleep. Alert wakefulness is often more than a matter of getting sufficient sleep.

3. **Steps on the ladder of success.** Draw a picture of a ladder on the blackboard. Print the word REST on the

first rung. Discuss the importance of rest in life. Print **RESTRAINT** on the second rung. Discuss. Print **WRESTLE** on the third rung. Discuss the things in life with which one must wrestle. One needs to rest if one is to wrestle successfully.

Other important steps on the ladder are: **INTEREST**, **RESTORE**, and **ARREST**. In discussing each of these, emphasize the importance of rest, sleep, relaxation, and recreation.

Classroom Methods

Paper devices. The following device dealing with the topic "Sleep" should suggest many ways of using similar ones for teaching health and safety. It is novel, it secures the attention of the class, and it leaves a lasting visual memory.

On a large sheet of white paper outline the picture shown in Figure 53. Upon opening the folder, the owl's beak opens and in it appears a message to the child. The cover page should carry a colorful picture of something appropriate to the topic; for example, the picture of three children at play.

When the device is ready, the teacher shows the cover page to the pupils and tells them that the three children have several pals—Fresh Air, Play, and———. She then asks the pupils to tell who the third pal is. Some pupils will suggest *food*, others *sunshine*, and some may even suggest *pets* as the third. All answers are equally good. The teacher then tells the pupils that there is another pal whom they ought to know, and that she is going to tell them who that pal is. She opens the folder slowly and asks the pupils to tell what the owl says. Children then read the message, **SLEEP**, in the beak of the owl.

Pupils may be asked to make a similar paper device.

They should be asked to change the contents and shape of the device they make.

Correlation. A promising forward step in health education is recognition of the fact that health should be taught as part of every subject in the curriculum. Health is no more an unrelated subject of study than is ethics. Both subjects are concerned with life as a whole, and with living life as such. Health and hygiene should be

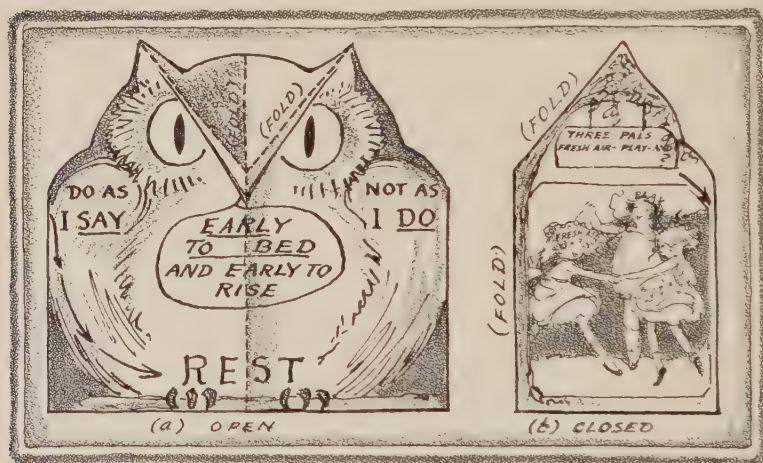


Figure 53. A Health Booklet

taught as being related to other subjects, and other subjects should be taught as being related to these. Both are related to everything pupils study and do. Health should be woven into the fabric of education like a golden thread.

Correlation in English. English literature offers many sources of material for use in teaching the hygiene of sleep. Small children will be interested in Eugene Field's poem, "Wynken, Blynken, and Nod," in Robert Louis Stevenson's "Northwest Passage," and many other poems

from that author's *A Child's Garden of Verses*. Walt Whitman's "The Man-of-War Bird," Coleridge's "The Ancient Mariner," and various passages from the Bible are also of interest in this connection. Many excellent quotations regarding sleep may be found in Shakespeare's works.

The alert and skillful teacher will find that English composition offers opportunity to correlate a study of the hygiene of sleep with the writing of themes and verses.

Correlation in history. Teachers who read history will recall many interesting incidents and episodes that can arouse the pupil's interest in sleep. There are many accounts of the sleeping sentry whose exhaustion or indolence caused the loss of a battle or siege.

Correlation in civics. The teacher of civics should call attention to laws and ordinances that forbid unnecessary noises in the vicinity of hospitals, and to other provisions made by society for protecting man in his hours of rest.

Correlation in geography. Geography offers the resourceful teacher a mass of material for correlation with the teaching of hygiene. When the class is studying the hygiene of sleep, pupils will be interested to do outside reading and so to find out about the strange sleeping customs of the people of other lands.

Correlation in other subjects. The teacher of hygiene can enlist the aid of the art teacher in having pupils make posters and do modeling that bear upon the subject of sleep. Music, manual training, and home economics may be used to bring out with fuller significance the lessons that have to do with sleep and with other topics of hygiene and sanitation.

Home assignment. Ask pupils to prepare a list of adjectives that may be used to describe a boy who has had sufficient sleep and all that ought to go with it. Build phrases and sentences containing those adjectives; for

example, *fresh* air, a *comfortable* bed, a *quiet* room, *sufficient* bed clothing, a *carefree* mind. In working out this assignment, pupils may be allowed the help of parents and others. Place the list of words on the blackboard for discussion.

Emphasize the fact that sleep improves one's disposition; it sweetens the cup of life. Point out that sleep is an important factor in one's appearance, especially so far as concerns the eyes and the tissues below them.

A game: The Sandman. (To be played on the playground by small children.) One player, The Sandman, stands within a small circle, The Land of Nod. The other players range themselves on a larger space at some distance. This is the goal or base.

At the start of the game the players venture off their goal, approach The Sandman, and ask him what time it is. ("What time is it"?) He may answer by saying "It is six o'clock" (or later). He leaves The Land of Nod as he does so, and chases the other players, who at once flee to their goal for safety.

When The Sandman catches a player by tagging him before he can reach the goal, that player must remain a prisoner in The Land of Nod until he can be released. He can only be released by another player who succeeds in running through The Land of Nod untouched by The Sandman, and at the same time crying, "Get up, Sleepy-head." If The Sandman succeeds in taking a second prisoner before the first can be released, the first prisoner then becomes The Sandman and the former Sandman in turn becomes one of the players. Then the game begins anew.

SUMMARY

Play re-creates the body; so, too, does sleep. Each is a form of recreation. The work that each does for the

body is essentially the same; one is merely a daytime recreation, the other a night-time recreation. Play is active, sleep is passive, but each is positive in its results. Sleep restores depleted nervous energy and repairs the wear and tear of the day. It is a constructive force in life; it counterbalances the destructive forces of mental and physical activity. Sleep is truly "tired Nature's sweet restorer."

People who want to lead lives that are up to par or above par in physical efficiency must have rest from physical and mental strain. For that reason teachers should lose no opportunity to impress their pupils with the necessity for rest and with the proper place of rest in the economy of the well-regulated life. Too, teachers should teach children the correct hygiene of sleep.

It is not enough, either, that teachers should instruct their pupils in the hygiene of sleep. If they themselves expect either to do good work for the present, or to succeed in teaching as a life work, then they must so order their own lives that they practice the three R's of relaxation—rest, recreation, reflection.

Rest is one of the wisest provisions of Nature. It brings repair, a renewal of bodily strength, and a renewal of strength of purpose. No matter how busy one may be, one cannot afford to disregard this prime essential of success. Man must have rest in order to do his best in the struggle of life.

Some Questions for Consideration

1. Which requires the greater amount of sleep, the thinker or the doer? Give reasons for your answer.
2. What can you suggest for one troubled with insomnia?
3. Discuss the relation of fatigue to accidents.
4. The present generation is living at a rate of speed heretofore unequalled. The "early to bed and early to rise" motto

of our parents is losing its significance. The child keeps later hours than ever before. Do you consider the situation to be a serious one, and if so, what suggestions can you make as to ways in which the schools may be helpful in relieving the tension of modern life?

5. What conditions are desirable if one's hours of rest are to be truly restful and invigorating?

6. Should we expect school children to sleep according to a schedule which is based upon age, or upon activity, or upon individual needs as determined by experience?

7. There are times when the teacher is more fatiguing to her pupils than a similar amount of play, or of work. Is this a necessary part of the learning process, or is it due to poor pedagogy?

8. Your school program may not have rest periods in it, per se, but there are times, certainly, when the pupil's rest needs are served, for example, the music period. What are some other ways?

References for Further Reading

McLaughlin, A. J., *Personal Hygiene*. (National Health Series.) (Funk and Wagnalls Company.)

Scham, M. and G., *The Tired Child*. (J. B. Lippincott Company.)

Pay Yourself Back, a pamphlet published by the Metropolitan Life Insurance Company, New York City.

Hygiene of the Land of Nod, a pamphlet published by the Life Extension Institute, 25 West 45th Street, New York City.

Sleep (Bulletin No. 12, Health Education Series), Bureau of Education, Department of the Interior, Washington, D. C.

CHAPTER XVIII

TURNING LEISURE INTO PLEASURE

The menace of leisure. In his address before the National Conference on Outdoor Recreation in 1926, President George B. Cutten, of Colgate University, said: "The most important problem that we have before us at the present time is what to do with the leisure that has been thrust upon us, and which may be a menace as well as a help." This statement recognizes the fact that leisure is a growing problem which society must meet. There is little promise that people will be able to find suitable activities for their new-found freedom unless they are skillfully directed. Work has been man's blessing; unless he can adjust himself to his freedom, it would have been better for him if the requirements of life had kept him continuously at work.

Leisure must not mean for society the idle mind that provides the devil's workshop. The menace of leisure is that society will not know how to make wise use of it. There is danger that in the reaction which results when effort gives place to comfort, man will reach down for his pleasures and not upward.

Education and recreation. The world is re-creating its ideas about recreation. People are beginning to realize that proper recreation must not be a foolish use of leisure. Education is teaching the public that recreation is a necessity of life. At the same time it is making clear that recreation cannot be taken all at one time, once each year, in a single period of a week or month. A much better plan for recreating body, mind, and spirit, is to divide the recreation period into many small ones to be

enjoyed at frequent intervals. Better results are gained.

Evaluating recreation. Education is also making clear that recreation is not a single standardized activity, equally good for every kind of person. For many people, recreation must be prescribed with the same good judgment used in prescribing medicine. The patient may need a stimulating tonic, an active form of recreation; on the contrary he may need a sedative, a passive form of recreation in which he is a spectator rather than a participant. Some people need active recreation during their leisure hours; others need a form of recreation less strenuous in nature.

The laborer usually enjoys some kind of commercialized recreation; motion pictures, for example. The business man often finds his recreation at home, working in the garden and being a Jack-of-all-trades. People engaged in indoor work frequently prefer to spend their leisure in the outdoors. City folk yearn for hills, fields, and rivers, for the freedom of the country. All about us are people hunting for pleasure during their leisure moments. Some carry a gun, others golf clubs, others tools, and still others tickets of admission to some form of commercial recreation. By millions all these people press forward toward the same objective—recreation.

All social groups, the family, the church, and the state now recognize the need for better and more wholesome forms of recreation for those who have leisure. Those social groups have heeded the call to service; each makes its contribution thoughtfully and conscientiously. Recreation must be taught as another R of education.

In many ways recreation may be likened to food. It should always be clean, wholesome, substantial, and spiritually and mentally nutritious. It should never be too spicy. It should be stimulating without being intoxi-

cating. Too much recreation is in its way as bad as too much food. Both should be taken regularly, of course, and common sense should be used in taking each. Companionship helps to make recreation enjoyable, just as it adds pleasure to the dinner hour. And if the recreation hour, like the dinner hour, were preceded by a word of grace, the effect could not be other than good. Recreation nourishes the soul of man, even as food nourishes his body.

Outdoor recreation. The benefits that man derives from life in the open are well known. The great outdoors is the original homesite of the human race. For the most part, outdoor activities are natural activities; the environment of fields and forests, hills and hollows, sunshine, fragrance, and beauty cannot but be healthful. It is especially desirable that as men come into their heritage of leisure, they shall at intervals forsake the artificiality of industrial life for a short time and get outdoors where Nature still defies the march of civilization.

A former president of the United States, speaking before a conference of national organizations interested in outdoor recreation, said: "I want to see all Americans have a reasonable amount of leisure. Then I want to see them educated to use such leisure for their own enjoyment and betterment and the strengthening of the quality of their citizenship. We can go a long way in that direction by getting them out of doors and really interested in nature."

And in a statement emphasizing the need of a national outdoor recreation policy, which former President Coolidge issued from the White House, he said: "Particularly within the last decade, the outdoor recreation spirit among our people has increased rapidly. During this period there have been put forward projects—federal, municipal,

state, and private—to expand and conserve throughout the country our recreational opportunities. It is almost idle to emphasize their value to the country. The physical vigor, moral strength, and clean simplicity of mind of the American people can be immeasurably furthered by the properly developed opportunities for the life in the open afforded by our forests, mountains, and waterways. Life in the open is a great character builder. From such life much of the American spirit of freedom springs. Furthering the opportunities of all for such life ranks in the general class with education.”

Commercialized recreation. Promoters, ever alert for an opportunity to secure good financial returns, are investing large sums of money in amusement places, recreation resorts, sporting goods manufacture, and transportation facilities. They know that the people of this country will pay well for recreation. For the most part, commercial interests have given thought to the welfare of their patrons as well as to their own investments. In general, commercialized recreation is reasonably well supervised.

People who patronize amusement places and recreation resorts most often need supervision. They frequently fail in selecting the proper form of amusement during their leisure. They too often select indoor amusements in which they take no part. This supplies an emotional stimulus, but it does not build one up physically. Especially during the winter months, indoor recreation fills a very definite need, but wherever possible it ought to be coupled with active, outdoor recreation.

Too much of the present-day outdoor recreation is “spectator athletics” rather than “participating athletics.” Both kinds are of value, to be sure, but either should be only a part of any individual’s recreation program. Promoters and Nature need not be regarded as competing

with one another in providing opportunities for recreation. Each serves a purpose; both should receive recognition by the citizens whose quest is amusement, enjoyment, and physical and mental profit. In planning one's use of leisure it is well to keep in mind that spare time, like spare money, should be invested wisely.

Recreation and culture. Sport clothes and a coat of tan are not necessarily the accompaniments of a period of recreation. To many people, recreation means an opportunity to enjoy art, music, and literature, the works of man, rather than to enjoy the works of Nature. Time spent with treasures of thought and the accomplishments of master minds may as truly be recreation as that spent in making excursions. Any recreative activity means a renewal of life and a revelation of life.

SOME SUGGESTED METHODS

Leisuregrams

Measure your pleasure.

Wasted leisure is not recreation.

Recreation should never cost loss of self-respect.

"In youth I wasted time, and now doth Time waste me."

Treasure your leisure.

Common sense and self-respect have no holidays.

Some Blackboard Devices

1. **How to measure pleasure.** Briefly discuss the various units of measure which pupils know. (Use this as a review.) Make clear that these units are used for measuring concrete things. Explain that scientists are now devising ways of measuring qualities of mind, which are not concrete at all. (The measurement of intelligence is an example of this.) Men have long estimated qualities of mind, for they have from earliest times been judging the honesty, loyalty, and character of their fellows.

Ask the pupils to suggest ways of measuring pleasure.

Let one pupil write the answers on the blackboard. Pleasure may be measured by happiness, facial expression, laughter, clapping hands, and in other ways.

2. **The value of leisure.** The poet Young said, "Time wasted is existence; used, is life." Emphasize the thought that time is an item in life by printing TIME on the blackboard and then transposing the letters so as to make them spell ITEM. Pupils should be taught to value their leisure. Spare time is valuable. Regardless of the amount of spare time an individual may have, he has none to spare. Tell the class about the Lorado Taft "Fountain of Time," on the Chicago Midway, and emphasize the thought of the artist that it is man, not Time, that passes. Time stays.

Some Class Assignments

1. **Making an amusement list.** Ask pupils to list their favorite amusements in the order of enjoyment. Base class discussions on those lists, and give special attention to the health, safety, cost, and social values of the amusements mentioned.

Such lists are valuable to teachers because they show what may be done to improve the quality of recreation activities in the community. From the point of view of physical education, the lists indicate the play interests of pupils and show whether or not games and physical activities taught in school carry over into the after-school life of the children.

2. **A program for the day.** Life gives each of us twenty-four hours a day to be spent in some way. Some of the time must, of course, be used for eating, some of it for rest, some of it for meeting other requirements of the body.

Explain to pupils how to divide their twenty-four hours

so that it will include the activities listed below. The division need not be exact, of course. A graph that represents a pie cut into pieces of various sizes may be used to make this point clear. The activities should include these: (1) Eating; (2) personal hygiene (cleanliness, toilet, etc.); (3) study; (4) work; (5) active play; (6) walking (to school and on errands); (7) amusement (quiet games, reading, entertainment, riding, etc.); (8) rest (which should include sleep); (9) wasted time (fooling, getting into trouble, making trouble for others, loafing instead of studying or working); (10) time spent outdoors. Each pupil will usually be pleased to make his own graph that shows what becomes of his day.

Some Classroom Devices

1. **A barrel of fun.** Make a cardboard barrel about 24 inches high, decorate it appropriately, and show it to the class. Ask pupils for ideas as to its intended use. Explain that the contents of the barrel are to be used to make fun from time to time when the work of the class merits a few minutes of recreation.

First of all, however, the barrel must be filled. Doing that is to be the pupils' task. The pupils are to fill the barrel with paper nails. To be of any use, a nail must be made of the right kind of iron, and it must be sharp and straight. Unless a nail has a head, it can be of but little use. Tell the pupils they must use their heads in making the right kind of nails for the Barrel of Fun.

The nails are to be compositions on the topic *Fun*. The composition may tell of an experience on the Fourth of July, on Hallowe'en, or on any other holiday. The contents of the barrel should also include at least one riddle, one joke, and an anagram or other word puzzle. After a composition is written, it should be rolled up (to

resemble a long nail) then tied with a string or sealed with paste. The writer's name should be printed on the outside. The paper nail is then placed in the Barrel of Fun and all kept secret until the barrel is opened.

These "fun nails" are to be used, one at a time, during the school term, to relieve the tension of lessons. The compositions will be read and discussed. The riddles, jokes, and puzzles will be solved by the pupils.

The teacher should emphasize the importance of having something worth while to do during leisure moments, and she should present an ideal of fun that is clean, straight, and useful, and that has both head and point to it, as has a new nail.

Some Classroom Games

1. **Through-the-Eye-of-the-Needle relay.** Arrange the class so that there is an equal number of pupils in each row. Pupils in each alternate row should stand in the right-hand aisle and place the right hand on top of the head. The leader (first pupil) in each row has a bean-bag or eraser in his left hand; this is the "thread" that is to be passed through the "needle's eye" (the space made by the right arm that touches the head).

At a given signal the leader passes the "thread" through the "eye" of his needle. The player immediately behind him grasps the "thread" with his left hand and then passes it through his "eye." This continues until the last player in each row receives the "thread." As soon as he has it in hand, he runs up the left aisle to the head of the row of pupils and again starts the "thread" on its way. Thus the game continues until each child in the row has, in his turn, had his place at the head of the line. When all players in a row have raced once, and the leader has again taken his place at the head of the line, the race

is finished. The row that first completes its relay wins the race.

When the pupils in one set of rows have raced, those in the other set of rows then have their race in the same fashion. The winners of the second race race the winners of the first for final honors.

A variation of this play consists in having all rows make the race at the same time. So soon as the "thread" reaches the last player in a row, all pupils face about and the "thread" is then started back. The row that first passes the "thread" down and back is the winner. This plan of play requires less time, causes less noise, and gives an opportunity for all pupils to have part in the game.

2. **"Do This, Do That."** Pupils stand in the aisles. The teacher or one of the older pupils acts as leader. The leader gives the command, "Do this," and at the same moment executes some exercise which all the pupils repeat. The commands are given in quick succession and a new exercise is set at each command.

When the leader says, "Do that," the pupils are not to repeat the motion that he performs. Pupils who follow the leader's motions when he gives the command, "Do that," are caught napping.

At the conclusion of the game, pupils who have been caught napping once, twice, three times, and so on, raise their hands when asked to do so. The object of the game is to carry on without making any mistakes at all. The object of the leader is, of course, to catch as many pupils as possible in this contest of mental alertness.

The Library Corner

Every school should make provision for pupils to employ themselves at some worth while activity whenever they have leisure. A few interesting books on a table in one

corner of the classroom, where pupils may go to read when they have no other work to do, improves discipline and enables children to learn one way of making good use of leisure.

SUMMARY

As a result of mechanical inventions, the specialization of labor, and the organization of industry, man finds that he can now meet the requirements of living more easily than at any previous time. His work is less arduous, his working hours are fewer, and he has more leisure. Leisure is one of the most important gifts that the twentieth century has made to civilized man; and the twentieth century finds man none too well prepared to make intelligent use of it. According to man's purpose, and to his ability to employ leisure profitably, he will find it to be a blessing or a curse.

Having given leisure to man, society now faces the task of teaching man how to use his leisure wisely. It is even necessary to pass legislation that will keep unprincipled interests from exploiting people who have leisure, yet who do not know how best to use it. Preventing a senseless waste of leisure is a serious problem that now confronts modern civilized governments. Wasted leisure is more than a negative evil; it is truly a positive evil as well. For wasted leisure means more than wasted time, wasted energy, wasted opportunity, and unplanned activity. Degrading pleasures that are pursued when leisure is wasted react not alone upon the individual but also upon society.

The responsibility for safeguarding adults as well as youth during leisure hours is to some extent, at least, a duty of educators. The moral issues involved are even greater than are those concerned with the purely physical considerations of health and safety. Teachers and other well-meaning citizens must see to it that those about

them learn how to spend leisure with profit to themselves and to the community.

Some Questions for Consideration

1. Is the leisure of the child or that of the adult of greater importance? Give reasons for your opinion.

2. What is being done nowadays to improve opportunities for spending leisure profitably? Suggest some things that may be done in your own community.

3. Cite examples from history that exemplify the ill effects of a waste of leisure by either individuals or nations.

4. In what ways do you think that city planning is taking cognizance of, and making provision for, the recreational needs of the public? (One way is to make provision for parks.)

5. The indications are that labor is going to have a shorter work day, and quite likely, a five-day week. Do you see any indications that teachers are also going to have more leisure? If so, how do you think it is going to be made possible?

6. What are some of the ways in which the following organizations are proving helpful in meeting the leisure time problem of young people: Boy Scouts, Girl Scouts, Camp Fire Girls, Girl Reserves (Y. W. C. A.), Hi Y Clubs (Y. M. C. A.), 4 H Clubs (United States Department of Agriculture Extension Work). Do you know of other organizations that are doing work similar to the foregoing?

7. Are you familiar with the work of Community Service, Inc., 315 4th Ave., New York City? Are there any practical ways to use its program in your community?

References for Further Reading

Curtis, H. S., *Recreation for Teachers*. (The Macmillan Company.)

Lee, Joseph, *Play in Education*. (The Macmillan Company.)

Nash, J. B., *The Organization and Administration of Playgrounds and Recreation*. (A. S. Barnes and Company.)

Proceedings of the National Conference on Outdoor Recreation. (Senate Document No. 151.) Washington, D. C.

The Playground. Vol. XX, Nos. 10, 11, 12. Published by the Playground and Recreation Association of America, New York City.

CHAPTER XIX

AT THE CROSSROADS

Rural health problems. Maintaining the health of the rural population is a problem because of certain essential characteristics of rural life. Because of the greater per capita cost, communities are not as well policed in the country as in the city. Medical facilities and medical organizations are less readily available there because those are centralized in cities. Sanitary regulations are either non-existent or less well enforced in the rural districts. There, too, the program of health education is less actively promoted. Long hours of hard work tend to make the rural population often susceptible to the ravages of disease. None of these conditions, obviously, reflect any discredit on rural communities or their citizens.

Rural life has a great advantage, however—it is the advantage that much of the work is out-of-doors, in air that is fresh and ordinarily unpolluted. And the work itself is healthful enough, were it not for the long hours and over-taxing of strength on the part of individuals. Any health program for rural communities, therefore, takes into account the fundamental healthfulness of rural life. This must be safeguarded and increased, for it furnishes an encouraging basis for any health project.

Hygiene of the rural home. More than any other single factor, the character of the home determines the health of the individual. There he spends most of his early years and nearly a third of the other years of his life. From the home the individual gets many of his health habits, attitudes, and ideals. It is a place of group interests where all are for the family and the family is for all.

So far as concerns soap and scrubbing brush, broom and dustcloth, clean linen and bright silver, the country housekeeper ranks favorably alongside the housekeeper of the city. Housekeeping is well done in the country, but health-keeping there may be improved. And only because health-keeping in the country is more difficult than in the city is there reason for proposing one method of hygiene practice for rural districts, another for urban communities. Today, because of changing customs, standards, and environment, due to the more widespread employment of educational agencies, public health services, and more abundant capital, differences between the health status of rural and urban districts are being gradually cleared away. Those interested in the promotion of health and public welfare, thoroughly aware that health must begin in the home, are nowadays making special effort to improve health surroundings and raise the standard of healthful living in the rural communities.

Many farmhouses in rural districts have special health problems because of their location and construction. These problems are chiefly concerned with heating, ventilation, lighting, plumbing, refrigeration, and the eradication of insects and other domestic pests.

In homes heated by stoves the temperature is apt to fluctuate considerably. Some rooms are too warm, others are cold. The living room, where the family spends winter evenings, is often overheated. To save heat, ventilation is neglected. Sleeping rooms are often poorly heated, and as a result windows are opened little if any. Where oil is used for lighting, gases of the flame tend to vitiate the air, its heat causes undue warmth, and the burning process consumes too much of the available oxygen supply. Those who read, study, or sew by such a light are likely to undergo eyestrain.

In homes where there is no running water, cleanliness becomes a problem. Where the dipper serves as a common drinking cup, it is possible for anyone to pollute the family's drinking water. Maintaining personal cleanliness is also difficult in homes without running water. This is especially so during winter months when both house and water must be heated. Lack of adequate plumbing makes an outhouse a necessity. The inconvenience of using an outdoor privy, especially at night and in winter, is probably an important factor in forming poor habits of body waste elimination.

Where the outdoor privy is used, there is also the danger of insect-borne disease. Barns are ideal breeding-places for flies. Barns attract rats and mice, and those rodents make their way into the house where they constitute a pest if not a disease menace.

Further, since farm work is not clean work at all, dirt tracked into the house complicates the housekeeper's problem of keeping the home clean. These are some of the conditions that must receive attention in any consideration of rural hygiene.

However, it is not poor lighting, insufficient ventilation, inadequate heating, and the lack of plumbing which make rural life a special health problem. Rather, it is polluted drinking water, insect-borne disease, and infected food. Here as elsewhere the problem is bacteriological rather than physical; the question has to do with the presence of disease germs rather than the absence of home comforts. A better understanding of the role of food, fingers, and flies in causing disease will do much to make the rural home healthful.

Rural sanitation. In the country sanitation is a personal matter. In the more thinly settled rural districts, sanitary precautions serve chiefly as a protective measure

for the family and its guests. They do not function for the community. The isolated farmhouse is subject chiefly to its own environment, and the health of members of the household is largely under its own control so far as concerns environmental factors.

In rural districts, health problems that originate as a result of environmental conditions are due; (1) to swamps, ponds, and meadows, (2) to barnyards, (3) to outhouses, and (4) to surface and underground drainage from outhouses, cesspools, and other sources of infection. A detailed explanation of the manner in which infection may be transmitted from the sources mentioned is unnecessary because people are nowadays generally informed about that process.

Swamps, ponds, and stagnant pools in meadows, and elsewhere provide suitable breeding-places for mosquitoes. These insects are not alone a pest, as everybody knows; certain varieties are actual carriers of disease. One kind of mosquito causes malaria, a disease well-known in certain states of the union. Another kind causes yellow fever. Fortunately this last-named dread disease has been brought under control.

The barnyard, even when cared for in a most sanitary fashion, nevertheless remains an excellent breeding-place for house flies. These insects lay their eggs in warm, decaying manure. There the eggs hatch, and presently swarms of flies infest the area. The house fly is not alone a household pest; it is truly a grave menace to health. It feeds upon offal and putrid matter, from which its body, especially its feet and legs, become infested with germs, especially with the germs of typhoid fever and intestinal ailments. On this account the fly is likely to infect foodstuffs upon which it alights when it gets into the household.

The water supply furnished by open wells and cisterns is peculiarly subject to pollution and contamination by infectious substances that enter it as surface or underground drainage from adjacent cesspools and outhouses. The rural dweller who depends upon ground storage for his drinking water supply must be ever on the alert unless he once for all takes proper sanitary measures to protect the supply from contamination.

The health of the rural child. Judged by such factors as growth, strength, energy, and time lost on account of illness, the health of the rural child compares favorably with that of the city child. These standards are inadequate, however, for judging the health of children. So far as concerns nutrition and minor physical defects—the latter including adenoids, infected tonsils, and poor teeth—the rural child does not rank so high as people generally believe.

With regard to the rural child, the nutrition problem is not one of food quantity; rather, it is one of food quality. Seemingly there are no physiological reasons why the rural child should have more physical defects than other children have; physical defects are not caused by environment but from neglect. Doubtless more physical defects are noted among rural children merely because there are fewer opportunities in country districts for satisfactory physical and medical examinations and for the administration of corrective measures.

Further, the cause of physical defects among rural children is certainly not due to inheritance, for the human stock of this country's rural population is assuredly as good as, or better than, that of city dwellers. It would seem that the prevalence of physical defects among children who live in the country may be attributed to a lack of medical and dental attention that should be given.

So far, then, as concerns nutrition, recreation, proper hours for work and rest, and sufficient medical and dental attention, the rural child may be considered as being somewhat handicapped. In any program of health education designed for rural communities, teachers and health supervisors should see that these topics receive a sufficient amount of attention.

Hygiene for domestic animals. The care of domestic animals has two aspects; one is the economic, the other, the hygienic. A tuberculous cow or a horse afflicted with glanders is an economic loss; what is of even greater consequence, either may be a serious menace to the health of members of a community, and to that of other animals of the vicinity. A dog afflicted with rabies endangers the life of anyone whom he may bite. Hogs affected with trichiniasis, a peculiar worm infection, produce pork that endangers the well-being of those who eat it. Under certain conditions, cats and dogs may carry infections.

Providing healthful living conditions for domestic animals is not alone good economy; it is also evidence of a humane spirit. Like human beings, animals respond to hygienic surroundings. Adequate sunlight, proper ventilation, clean food and drink, comfortable bedding, opportunity for exercise, protection from the inclemency of both hot and cold weather, and medical treatment when necessary are matters of importance in present-day methods of handling live stock. The wise farmer buys only animals that have been tested for tuberculosis and found free of that disease. He has his dogs immunized against rabies. In short, the enterprising farmer uses wisdom and judgment in selecting his live stock, in providing improved living conditions for it, in securing veterinary attention promptly, and in making use of methods of immunization where it is not profitable to be without that security.

Children should of course be taught by both precept and example to avoid strange animals and even pets when they are eating or when they appear to be sick. So far as concerns pets that are apparently in good health, that are playful, that behave naturally in every way, and that have not been about persons sick of a communicable disease, let us continue to find a place for them in our hearts and also in our arms if that is the way we desire to express our feeling for them. It would be unfortunate indeed if children should be taught to fear and to avoid animal pets merely because the latter are possible sources of disease transmission.

SOME SUGGESTED METHODS

Health Slogans

Health begins at home.

Well-water is not always *well* water.

Sanitation helps to lift the mortgage of disease.

Common sense and the common towel have nothing in common.

In the country, disease travels in a *fly-line*, not in a *bee-line*.

The health slogans given above may be placed on the blackboard, as has been previously suggested, or each may be placed in an envelope and posted in the school "mail box." The latter may be merely a cardboard box that stands on the teacher's desk, or it may be as pretentious as the teacher cares to have pupils make it.

The school "mail box" is a clever and entertaining means of getting to the children important matters that pertain to health, sanitation, or other topics suitable for them to know. Pupils may be instructed to place in the "mail box" whatever items relating to health they think their fellows should learn about. Such communications should always be censored by the teachers before they are placed in the "mail box." The teacher herself may contribute interesting material.

Health slogans may also be put before the class in an entertaining manner by making them up as though they were billboard posters which are commonly posted in so-called "sheets." The teacher should boldly letter the slogan on a sheet of white paper about 18 inches by 36 inches in size. That sheet should then be cut into six smaller pieces of equal size. The small "sheets" may be pasted at a proper place on the blackboard, one at a time and one each day, until the whole has been pasted up. Paste the parts so as to keep pupils guessing as to the words of the whole until the last "sheet" has been displayed.

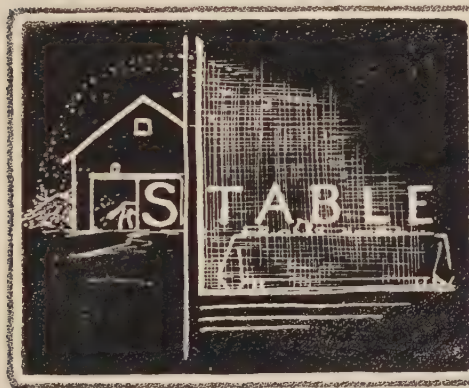


Figure 54. Itinerary of Fly



Figure 55.

Blackboard Material

1. **The itinerary of a house fly.** Discuss the breeding-places and the feeding-places of the house fly. Explain how it gathers disease germs upon its body and then later distributes them on dishes and eatables when those are accessible to it. Make clear that the house fly is a disgustingly repulsive insect because of the kinds of substances it uses for food and because of its habits of elimination and distribution.

By using a drawing like that shown in Figure 54, the teacher may make clear how the house fly carries disease germs about. Print the word STABLE on the blackboard; underline the word TABLE, the place to which the fly goes when it is ABLE. Show, also, how a fly screen will prevent the house fly from making this trip.

2. Steps to health and safety. As shown by Figure 55, draw a flight of steps on the blackboard. Explain to pupils that the steps to health and safety differ from ordinary steps of a stairway. On a stairway, one uses the same amount of effort in going from one step to another. In matters of health and safety, however, some steps are easier than others and some give better footing than others. Ask pupils to name the easy steps, the difficult steps, and the slippery steps on the stairway that leads to health and safety. Exercise, for example, is an easy step; cleanliness may be a difficult step; carefulness is nearly always a slippery step. One may fall from the latter unless one is especially cautious at all times.

Some Teaching Devices

A question-and-answer device. Prepare a large-size wall poster by printing on it a number of health and safety questions. From newspapers and magazines clip pictures for illustrating this chart. For each of the questions, one picture should illustrate the question itself, the other should illustrate the answer. Paste one pair of pictures opposite each question, one picture above the other.

To use this device, display the poster and have some pupil read one of the questions. The class may then discuss it fully. When the discussion closes, raise the opposite top picture, and so display the picture underneath it which gives the answer to the question. For example,

the question might be, "What is the danger of neglecting the proper care of wounds?" The top picture opposite this query might be one showing a child injuring himself with a knife. The lower picture, that is, the one which illustrates the answer to the query, might show a germ colony, or it might show a doctor visiting a child who is sick in bed.

The teacher should not fail to make the point that not every wound results seriously, as pupils will quickly recognize from their own experiences. But the teacher should also make clear that it never pays to take chances when dealing with an injury of any kind.

The three strands of life. The teacher should use an encyclopedia to acquaint herself with ropes and rope-making. She may then discuss this topic with the pupils, and so lead up to a discussion of the three strands in the rope of life. These are: (1) Inheritance—that which one's ancestors contribute to one's life; (2) medical science—that which those skilled in the art of healing contribute to one's life; (3) hygiene—that which each individual contributes to his own life.

Some Health Games

1. **The tug of war.** This game may be played by having pupils group themselves in teams. The players may use a real rope or they may pull in groups by standing one behind the other and each placing his arms about the waist of the pupil in front of him. The teams may be named for foods; for example, *apples* against *oranges*, where foods of the same classification are used, or *fruits* against *vegetables*, where foods of different classification are used. It is inadvisable to have good and poor foods compete; that is, do not name one team *milk*, another *coffee*; it might result in a wrong impression.

2. **Rope calisthenics.** Pupils should stand in line, side by side and shoulder to shoulder. Using both hands, each grasps a stout rope which should be long enough to extend the length of the entire line. At the teacher's command, and in unison with her movements, pupils execute the exercise that the teacher selects. Good exercises for this drill are: (1) Arms forward (front)! (2) Arms over head! (3) Arms forward and bend knees! (4) Arms over head and bend knees! (5) Arms forward with step forward! (6) Repeat the foregoing movements. (The teacher will find it necessary to practice any such exercise for coördination and rhythm.)

3. **The long-rope jump.** Use a rope about twenty feet long. One end should be attached to a tree or building or held by a pupil. The other end should be held and turned by the teacher.

Have pupils form in line, one behind the other, and run through the rope as it turns. Runners should follow one another closely. During the course of the game, the teacher should reverse the direction of the rope and then have the pupils jump through again.

Have players go through the following movements:

1. Run through, turn, and jump back as the rope turns.
2. Run through in pairs.
3. Run through in pairs, turn and run back.
4. Close eyes, judge the speed of the swinging rope by the sound it makes as it sweeps the ground, and then run through.
5. Repeat the foregoing exercises with the rope making a reverse turn.
6. Repeat the foregoing exercises, having the players run through in pairs, holding hands.

The above and other activities which pupils themselves will suggest afford interesting exercise, and require the

use of good judgment, coördination, and some courage.

The game of "Spill." The aim of this game is not only to afford pupils a lot of riotous fun and healthful exercise, but also to review what they have learned about foods and food values. It is played as follows.

First of all the teacher selects two pupils to be the "market basket." These pupils grasp each other's hands and so form an enclosure by means of their extended arms. Other pupils are then designated as foods—fruits, vegetables, dairy products, and such. If desirable, pupils may be allowed to select the food they want to represent and to give reasons for their choices. This gives opportunity for class discussion of foods and food values.

Before beginning the game, each unoccupied seat in the room, and also each of the two seats that belong to the two pupils designated to form the "basket," is marked by laying a book on the desk. When the "basket" finally "spills," pupils may not, in their scramble for places, take seats so marked. Thus, after each "spill," two pupils will always be without places. This situation automatically designates them as the ones who are to form the next "basket."

The game begins by having the "basket" move through the aisles to select the "foods" it wants. Whenever a "food" is selected, the pupil who represents that "food" leaves his seat and takes his place within the circle formed by the extended arms of the two pupils who represent the "basket." As the "basket" fills and becomes too unwieldy to move through the narrow aisles, it may move about in the wider aisles at the sides of the room, or in the open space at the front. From those points it may call to the "foods" desired. When a "food" is called, the pupil leaves his seat and goes to the "basket."

The filling of the "basket" continues until the extended

arms of the two pupils can no longer enclose the "foods." Then the two pupils "spill" the "basket" by releasing their hand grasp. All players then hurry to find seats, and the two pupils who fail to do so form the next "basket." The game then begins anew.

This game should have plenty of action; "spills" should be frequent so that every pupil may have several chances to take an active part. The greater the number of "foods" selected, the more fun for the players. Action may be increased by having all pupils change places whenever the "basket" makes a "spill," regardless of whether or not they were in the "basket" at the time.

This game may be varied in interesting fashion by having the "basket" go to market for some special purpose; for example, to select foods for someone who is ill, for use on a picnic, for a course dinner, or for an athlete. When the "basket" makes incorrect selections at such times, the fact should be indicated by the pupils raising their hands.

Classroom Assignment

Health broadcasting. Interest in the teaching plan explained here may be aroused by spending a little of the class period in discussing the principle of the radio, and in having pupils tell what they know about the use of radios for promoting amusement, education, and public welfare. These days most children readily respond to such an exercise.

Ask each pupil to appoint himself a broadcasting station and to use the letters of the word that designates a topic related in some manner or other to health. One child may select the letters KLIM (*milk*), another, TIURF (*fruit*), another, YLAP (*play*), and so on.

When called on, a pupil announces his station and

"broadcasts" on the proper topic. The "broadcasting" really consists of the child's telling what he knows about the topic. No pupil should be permitted to "broadcast" for more than a minute or two.

The teacher may keep a list of "stations" and from time to time throughout the year she may call on pupils to "broadcast." This plan keeps children alert and eager to "broadcast" information gathered outside of school.

SUMMARY

Always men have turned to the country in search of health, and the rural districts have supplied much of the vigorous manhood and womanhood which leads America. Yet, in spite of the pure air and outdoor life, the health rating of the rural population in general is not as high as we might expect. The examination of thousands of young men, when the United States entered the World War, revealed the fact that men from the rural districts often suffered as many physical handicaps as those from the city. We must look to several causes for an explanation of these facts.

Problems of ventilation, lighting, plumbing and even of location, are handicaps of many rural homes. Improved standards of lighting and heating are being adopted very widely, but they do not entirely replace the stove heating systems, which often are supplemented by closed windows, or the kerosene lamps whose flickering light places a serious handicap upon the child who must study at night. Toilet facilities, also, often make cleanliness and the formation of regular health habits difficult.

These problems, however, are not more important than the fact that many rural homes are menaced by sources of dangerous bacteria. Swamps, where disease-carrying mosquitoes may breed; the barnyard, from which come

those other disease-carrying pests, the flies; a water supply whose source may be polluted by drainage from waste—all of these threaten the health of the rural home. And the careful attempt at policing the community in the matter of sanitation, which the city dweller takes for granted, must be left in most cases to the enterprise of the individual farmer. There are also the minor possibilities of disease from contact with diseased animals.

While in general health and strength, the rural child seems to be superior to the city-bred child, the former often is found to have numerous physiological defects which may handicap him for life—diseased tonsils, adenoids, defective teeth, and weaknesses resulting from food adequate in quantity, but inadequate in quality and variety. These defects are the result of ignorance, and of the fact that many rural districts have inadequate medical attention—two explanations of the prevalence of the patent medicine habit.

The remedy for all of these conditions is knowledge and interest; to make the rural population health-conscious; to inspire the interest in active health which will lead to periodical physical examinations and adequate medical attention, and to proper care in sanitation. It is the privilege of the rural school teacher to be an important instrument in working toward this interest and increased knowledge. Thus the country's rich promise of health may be fulfilled not only to those who seek the country for rest and recreation, but also to those who make farming their life work.

Questions for Further Consideration

1. Are those types of people who have from the outset of our national life made up the rural population at present undergoing any change? Do you believe any change of this sort will affect

the character of America's rural citizenry? Explain your answer in detail.

2. Which has reached the greater degree of development in rural districts, hygienic and sanitary measures as applied to human beings, or as applied to the care of live stock? Explain fully.

3. What are the most important health problems of the rural district in which you live, or adjacent to the city where you live? What measures can you suggest for improving rural health conditions in your region?

4. Where do you think you would find the greater amount of malnutrition, in the city or in the country? Does the same hold true for poor posture, decayed teeth, and defective hearing?

5. What are some of the advantages the city schools have to offer to handicapped children that rural schools cannot offer?

6. The radio is proving to be an important factor in spreading health education throughout the rural districts of America. What are some other of the modern methods of health education as applied to rural communities?

7. What do you consider to be the biggest handicap to an all-round health education program in the country districts—lack of adequate funds, the disinclination of able dentists and doctors to practice there, or limited knowledge of health principles?

References for Further Reading

- Adams, S. H., *The Health Master*. (Houghton Mifflin Company.)
Andress, J. M., *Health Education in Rural Schools*. (Houghton Mifflin Company.)
Burnham, A. C., *The Community Health Problem*. (The Macmillan Company.)
Broadhurst, Jean, *Home and Community Hygiene*. (J. B. Lippincott Company.)
Coolidge, E. L., *Home Care of Sick Children*. (D. Appleton and Company.)
Harris, H. F., *Health on the Farm*. (Sturgis and Walton Company.)
Helps for the Rural School Nurse. (Health Education Bulletin No. 17.)
Bureau of Education, Department of the Interior, Washington, D. C.

CHAPTER XX

DOLLARS AND SENSE

The hazards of industry. Before the era of mass production and gigantic industrial enterprises, a personal element entered into the relationship between industrial manager and employee. The development of modern methods of production and the consequent development of the factory system altered the character of this relationship. The personal relationship between employer and employee disappeared as soon as the number of the workers increased to the point where the employer could not conveniently keep them in mind as individuals. The use of power-driven machinery, the increased rate of production and the growth of huge individual enterprises made the worker the prey of a system that in many instances robbed him of health and happiness alike.

Until the employers realized that industrial diseases and accidents affected them as well as their employees, most managers of industrial enterprises paid little attention to their workers' health and safety. When the public became awake to the situation, and when legislators began to frame laws for the regulation of working conditions, some twenty years ago, managers of businesses began to study the problems of industrial hygiene. They learned that the investment of good judgment in improving the working conditions of labor yields a money return. When the attention of industrial managers is limited only to the production of better goods, profits are really less than when that attention is directed jointly to the production of better goods and better health for the producers of those goods.

Occupation and health. In the early days of industry, man's occupations kept him in the open, made him strong and healthy, and contributed to his physical and mental well-being. Then the invention of machinery made it necessary that man go indoors to work. The change from an outdoor to an indoor life worked to man's disadvantage. The conditions under which he was forced to work were far from ideal. Ventilation was inadequate, crowding was inevitable, and health, safety and longevity paid tribute to ignorance, carelessness, and greed.

In the period of industrial progress in which we now live, industry is paying wages in health as well as in money. The workingman's physical and mental health is improving. By means of recreation, education, and health service, industry is providing inspiration, and building up a better morale among its workmen. The future, with its threat of a dependent old age, is less depressing because wages are increasing. Opportunities for making the future safe are being offered through insurance, through investment in company business, and through greater chance for promotion.

Primary factors of industrial hygiene. There are three interests to be served in considering the problems of industrial hygiene: those of the employer, the employee, and the public.

Employers have gradually come to the rescue of the workingman. Improved working conditions, higher wages, shorter hours, welfare work, and medical service have all become a part of modern industrial conditions. Industries have complied with laws enacted in response to the demands of organized labor for the protection of the workingman. Much remains to be done, but an example has been set by many industries, and the future promises well for fair and sympathetic coöperation between

employers and employees with better results for everyone.

In solving the industrial problems of today, the employee also has his part to play. He must coöperate with his employer, not only in production, but also in promoting health and safety. He must make use of the safeguards with which the industrial manager seeks to protect him. He is bound to protect the property of his employer from injury as a result of his own carelessness. His personal habits must be such that they neither reduce the quantity of his work nor lower its quality. Kober and Hanson, in their work entitled *Diseases of Occupation and Vocational Hygiene* point out that "health is the chief asset of the workingman, and no greater calamity can befall him than when his capacity is impaired or arrested by sickness."

The public must support legislation that favors improved working conditions if the health level of society is to be raised. Legislation must be fair, however, if it is not to handicap industry to such an extent that the return is too small to warrant an expansion of business. Public opinion should act as a governing device for industry. The public should maintain a constant demand for standard goods, pay a fair price for labor's production, and impartially consider the rights of capital and of labor.

Legislation and occupational diseases. Good results have followed much of the legislation which the government has enacted for the protection of employees. This legislation has been prohibitive, regulatory, and compensatory in nature. Some of it has provided for insurance. Prohibiting the use of white phosphorus in the match industry is a striking example of government prohibition in the field of industry. Another example of government regulation is that prohibiting the use of any form of shuttle (in textile mills) which makes it necessary for the

worker to use lips or mouth in threading the instrument. That method of threading shuttles was well called the "kiss of death" because of the danger of transmitting tuberculosis and other infectious diseases.

Regulations have been passed making it obligatory upon the employer in some industries to conform to prescribed laws dealing with ventilation, lighting, hours of labor, washrooms and toilets, minors, sex, and other problems peculiar to the circumstances.

The workmen's compensation or insurance plan provides pay and medical attention in cases where disability results from accident or disease contracted because of labor conditions. The burden of payment is placed upon the employer.

Sanitary engineering in industry. Dust, one of the most serious conditions with which industrial hygiene has had to cope, is becoming less and less a factor in maintaining the health of the employee. The problem of eliminating dust is attacked in three ways: (1) By preventing the formation of dust; (2) by removing dust before it becomes an industrial hazard; (3) by protecting the worker when it is necessary for him to work in a dusty environment. In some instances dust is kept down by using oil or water. Steam is used to keep dust damp so that it will not foul the air. In some industries dust is removed through exhaust ducts; in others, workmen are equipped with respirators. The most harmful dusts are the mineral dusts, and those that contain poisonous chemicals. Outdoor dust does not constitute a health menace to any great extent.

Personal hygiene as a factor in industry. The digestive system rivals the respiratory system as a means for the entrance of disease poisons and organisms. In the lead trades, for example, cleanliness is very important. Hands

and face must always be well washed before lunch is eaten—this for the protection of the employee. It is also important that the employee observe the laws of personal hygiene, if he handles foodstuffs which the public uses. Otherwise, tuberculosis, typhoid fever, diphtheria, and other infectious diseases may be transmitted by an infected employee who may not know that he is a carrier of disease germs.

Some conditions that handicap. It is not always a simple matter to enforce the regulations which the employer draws up for the protection of his employees. Fear of ridicule by fellow workmen may cause an employee to disregard the laws of health and safety while at his work. Some employees, for example, dislike to wear the respirator because it is unsightly and cumbersome. Other workmen forget to wear goggles or refuse to do so. There are always some employees who believe in their own destiny, and who take the position that safety measures are for others, not for themselves. The employee should feel that it is his responsibility to his employer and his family, as well as to himself, to make every reasonable effort to protect his health and safety.

First aid in industry. In many industrial establishments, first aid, which includes care of the employee's health and attention to his safety and general welfare, has of late years become a well-established part of organization policy. The employee receives the attention of a highly specialized group.

Although everything humanly possible is done to prevent accidents, nevertheless there is certain to be an element of error in the calculations, and in consequence provision is made for relief in case of emergencies. In some organizations, the company physician or nurse cares for all emergency cases. Many companies have a well-

equipped first aid room. In some plants, first aid crews have been organized. These crews, composed of selected men, receive special training from company doctors. Some of the first aid crews compete in contests each year and prizes are awarded for skill and general excellence. Most mining companies organize first aid crews into units equipped with modern devices for rescue work.

Most concerns find it advisable for the company and for the employee to have injuries cared for by professionals rather than by laymen. In the case of even so trivial a disablement as is caused by the presence of a cinder in the eye, the company prefers to have a physician remove the object rather than to leave the treatment of the injury to the hands of some well-meaning but untrained layman whose lack of skill may easily cause the minor injury to become a serious one. Apart from the humanitarian side of the matter, it is good business for employers to safeguard employees from accident and to see that skillful first aid treatment is rendered to them.

Every person who attempts to render first aid ought to feel deeply conscious of his responsibility to the patient whom he is trying to assist. Unless he understands what he is doing it is very easy for him to prove himself more of a hindrance than a help. This is especially true of the treatment of eye injuries and fractures.

The dignity of labor. Carlyle says that "labor, wide as the earth, has its summit in heaven." Progress is in direct relation to purposeful and effectual labor. It is significant of a better appreciation of the value of labor to the laborer as well as to society that so much is being done in these modern times to dignify work, and to extol its virtues for old as well as young. Ideals must function alongside material interests so that the standard of labor may inspire workmen everywhere.

SOME SUGGESTED METHODS

Workgrams

First plan your work, then work your plan.

It is better to wear out than to rust out.

A good workman is known by his tools, and he knows his tools.

It is not enough to finish a job; it should be a finished job.

Be a worker—never a shirker.

W O R K spells success.

Blackboard Material

1. **The quality of work.** Print W O R K on the blackboard, and ask the pupils to point out the two most important letters in the word.

As the letters O and K are named, draw perpendicular lines above them and connect them up so as to represent a ladder. (See Figure 56.) Explain that work that is OK leads upward on the ladder of success. Make the point that everyone should examine his work to see that it is OK. The employer will certainly look for the OK label, and the workman should, too.

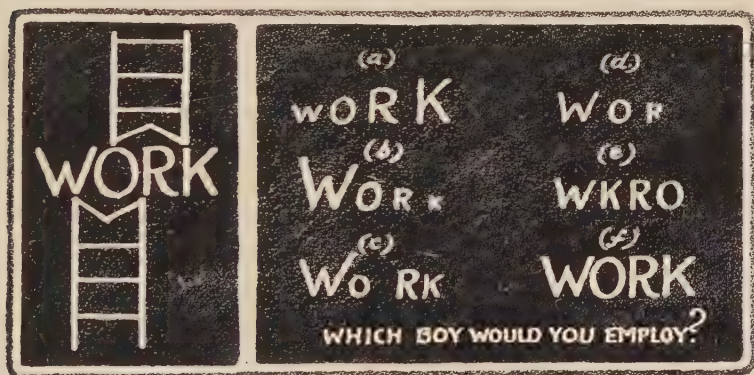
Sometimes work is far from OK. Draw perpendicular lines down from the letters W and R, and ask the pupils what those letters stand for. WR should stand for *wrong*, while OK stands for *right*. Connect the two lines so as to form a second ladder—the ladder of failure—that leads downward.

Erase the letters W and R. Tell the pupils that everyone should eliminate all that is wrong from his work, and leave nothing but that which is OK. Henry Van Dyke's poem, "Work," may be read and discussed in class. Impress pupils with the importance of work, not only to the world, but also to the worker.

2. **The quantity of work.** The amount of work done by any capable person should, as a result of practice,

increase until the output reaches a maximum. From that time on the amount should be fairly constant, changing only to meet such conditions as impaired health, fatigue, happiness, climatic conditions, and such. These variations, however, should not be marked. Regardless of emotions and temperature, a good workman should produce an average amount of work regularly.

Discuss the above thoughts with the pupils and show, by printing WORK on the blackboard in different ways,



Figures 56-57. The Quality and Quantity of Work

shown by Figure 57, how the output of work varies with individuals.

Figure (a), for example, shows how the quantity of work should increase as one becomes more proficient.

Figure (b) shows how some people work. Ask pupils to tell what lesson this figure teaches. Note that the amount of work accomplished steadily grows smaller.

Figure (c) brings out the fact that some people work by fits and starts. At times they do a large amount of work; at other times, very little. They are not steady. This is a serious fault in any person.

Figure (d) suggests the thought that some people never finish the job.

Figure (e) shows how some people, when at work, are active but accomplish only a little.

Figure (f) represents a good piece of work. It is the same all the way through. It is complete. It is something of which anyone may well be proud.

In discussing these lessons on the quality and quantity of work, emphasis should be given to the importance of health, proper clothing, correct posture, ideals of workmanship, and a favorable environment. Work of the right kind rewards with both satisfaction and money.

Some Home Assignments

1. Applying for a position. Clip a "Want Ad" from a newspaper, or compose one, and copy it on the blackboard. Then have each pupil write an application for the position mentioned, and include in it the facts he believes to be of interest to the prospective employer. Read some of the letters to the class and discuss with pupils the importance of training, references, education, and good health in securing employment.

Discuss some of the matters that the prospective employer is likely to discuss with a young applicant; smoking, for example, is one. Discuss, too, some of the facts of which a prospective employer is likely to make a mental note as he talks with an applicant; appearance, for example, is one of those. Pupils should be made to realize that work is never likely to seek them; rather, they must seek work. And they should learn when young what they can do to give themselves a chance that is at least fair.

2. The workman's code. Read *The Code of Successful Workers** to the class and ask pupils to draw up a code

*Published by The National Institution for Moral Instruction, Washington, D. C.

of their own. The code they make should include reference to the importance of work, respect for work that is useful to society, the right attitude toward those who have to work, determination to do work of high quality, to be industrious, prompt, faithful, loyal, and courteous, and to be worthy of increased responsibility in the business world, not only because of ability, but also because of just relations with those of subordinate positions. Reference to health, safety, appearance, and proper regard for the personal and property rights of others should also be included in this discussion.

Some Teaching Devices

1. **The pay envelope's contents.** Secure a blank pay envelope or use an ordinary envelope for this demonstration. Prepare five slips of paper small enough to go into the envelope. Print one of the following on each of the slips: MONEY; REPUTATION FOR WORKMANSHIP; SATISFACTION IN DOING A GOOD JOB; EXPERIENCE; SUCCESS. Place the slips inside the envelope. Ask the pupils about the contents of a pay envelope. First of all discuss money as one of the items in a pay envelope. Then draw out the other slips, one at a time, and discuss them, too. It is not always possible to increase the money contents of a pay envelope, but the other contents can be increased if there is a real determination to do so. The importance of health, training, the use of the special senses as well as of common sense, and perseverance in earning a living should receive proper emphasis in this discussion.

2. **The web of life.** The part that work plays in the life of animals and insects may often be used to advantage in working up material for class discussion. The bee, the ant, the beaver, and the spider are examples.

The following lesson, based on the spider's work in spinning a web, as here developed, may be used merely for class work, or it may be made the basis of an interesting booklet (Figure 58) to be made a home assignment.

Use the illustration of the spider's industry and skill in weaving its web to bring out the importance of using perseverance, skill, purpose, and knowledge in one's work.

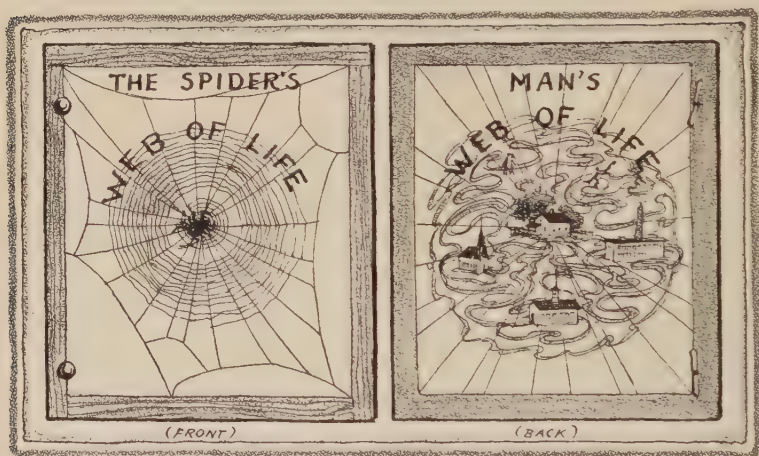


Figure 58. The Web of Life

The spider spins a web of life and death—life for it and death for the fly. Human beings should spin a web of life only—life for the workman and life for those with whom and for whom he works. Call attention to the fact that the spider seeks a good foundation for supporting its web; it spins evenly, skillfully, and rapidly. It does a finished piece of work.

3. **The work-span of the individual.** Draw four curves on the blackboard (as Figure 59 shows), using a crayon of different color for each. These represent the work-spans of four types of workers. The length of the curve

represents the quantity of work; the height, the quality.

Explain that one of the lines (A) represents the work-span of the average person; another (B) represents the work-span of a person who trained for his work; another (C) represents the work-span of the person who not only failed to make use of his opportunities but also abused himself; the fourth curve (D) represents the work-span of a person using all his physical and mental powers.

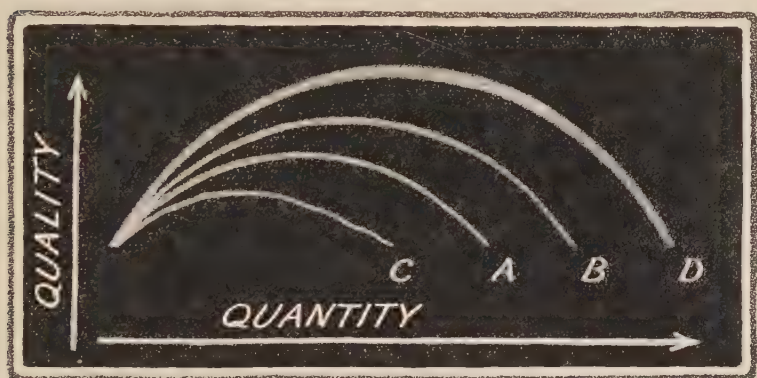


Figure 59. Work-spans of Four Types of Workers

Discuss the elements that enter into plotting one of these work-span curves. Make it clear that the person who trains for his work and who keeps in fit physical condition has a longer and higher work-span curve than has one who disregards health, safety, and training.

SUMMARY

Captains of industry have found that the health of their employees is something of value to employer as well as employee, although for different reasons in each case. The employee's health and safety constitute the hub of modern business; the success of any large industrial concern depends upon the workmen. They must have the

necessary tools, the right sort of supplies, the proper environment, and an incentive to do their best if their work is to be satisfactory to the employer. Employers know these facts. Stimulated by legislation, they have come to make proper consideration for the workman.

Many of the larger industrial establishments are moved by altruistic motives in looking after the welfare of their employees. They seem to be practicing a code stated more than fifty years ago by Peter Cooper, the distinguished New York banker and philanthropist. Peter Cooper said: "While I have always recognized that the object of business is to make money in an honorable manner, I have endeavored to remember that the object of life is to do good." The practical working out of similar ideals is often demonstrated by the philanthropies of people of means who give support to worthy causes.

Questions for Further Consideration

1. In what respects, if any, would you take exception to the saying that "whatever is worth doing is worth doing well"? Explain fully.
2. Discuss the relative values of vocational and avocational training.
3. Explain the significance of the statement that "health is an overtime job."
4. In what ways do workmen's compensation laws help to protect the health and welfare of children?
5. Is there any direct relation between thrift and health?
6. Are the older boys and girls in the elementary schools in your community receiving definite instruction in industrial hygiene? What does this instruction include?

References for Further Reading

- Chenery, W. L., *Industry and Human Welfare*. (The Macmillan Company.)
- Frankel, L. K., *The Health of the Worker*. (National Health Series.) (Funk and Wagnalls Company.)
- Tolman, W. H. and Gurhrie, A. W., *Hygiene for the Worker*. (American Book Company.)

CHAPTER XXI

PATROLLING AND CONTROLLING PUBLIC HEALTH

Community interests must be served. Society has come to realize the truth that its security depends upon having health laws which consider man not primarily as an individual but as a member of a group. From earliest times, and in every sort of social group, the individual was permitted to do as he pleased so long as his actions did not interfere with the rights of others. Gradually however, man learned that nearly everything the individual does reacts in some manner upon the other members of the community, and man's effort to control the life of the individual, for the good of society, is the foundation of nearly every law of civilization.

The laws of all civilized nations forbid the individual to take his own life. The laws of some civilized nations regulate even the habits of the citizens. In many states of our union, for example, minors may not purchase tobacco or tobacco products. In none of our states may an individual wreck even his own life by the use of harmful and habit-forming narcotics. Legislative enactments like those just cited are accepted by the people as advisable and necessary because they serve to safeguard the health of all members of a nation. The well-being of the majority must always be considered before the wishes of the minority.

The importance of united effort. The success of any community project—better streets, an improved police system, sound city financing, clean alleys, modern traffic regulations, or better health conditions—largely depends upon a proper unity of effort among citizens. If unity is

lacking when a community project is undertaken, the project is endangered. If unity is present, at least something will be accomplished. Like the fabled bundle of sticks, which, bound together, resulted in exceeding strength, a community project creates a force which can carry on until success is finally achieved, provided only that there is unity of effort as well as unity of sentiment. The distinguished American philosopher, John Dewey, says in his *Democracy and Education*: "A democracy is more than a form of government; it is, primarily, a mode of associated living." Associated living, that is, teamwork, coöperation, unity, must characterize life, if life is to be worth while to one's self or to others.

Organizing the community for better health. Public health pays big dividends in health and wealth, provided the people of the community support it hygienically as well as financially. A community health program based upon the principle that the individual has responsibilities to the community, and that the community has responsibilities to the individual, reduces the percentage of cases of disease, aids in diagnosing and treating disease, provides a means of immunization, acquaints the public with health conditions, serves as an educational medium, and, through its researches and investigations places its health work on a scientific basis. Besides, it does constructive work in promoting the health of individuals, especially the health of the child and of the industrial worker.

Among the communities where outstanding public health work is being done are these: Athens, Georgia; Fargo, North Dakota; Rutherford County, Tennessee. In the above places, representatives of the Commonwealth Fund for promoting a child health program are collaborating with local authorities. Framingham, Massachusetts, carries on its own program of public health. The

Milbank Memorial Fund, similar to the Commonwealth Fund, has helped to put into operation public health programs in Cattaraugus County, Syracuse, and Bellevue-Yorkville, New York. The Rockefeller Foundation and the Russell Sage Foundation are aiding public health programs in many parts of the country. In Chicago, the Elizabeth McCormick Memorial Fund is being used to advantage in furthering health work among children. The work of the American Red Cross is too well known to require more than mention.

The public health program. Several items must be considered when effecting a public health program. To be effective, public health work must have authority to deal with its problems. There must be health regulations, and there must be a means for enforcing them. Funds must be obtained for personnel, equipment, supplies, and other running expenses. There must be legislation, organization, administration, and coöperation. The community must provide the necessary legislation and coöperation. The public health officials must attend to the organization and administration. If one thinks of public health authorities as officers in the war that is waged against disease, and if one thinks of humanity as the army that must do the fighting if victory is to be won, then one will have some conception of the relation of health officers to the community.

Public health activities. The following activities are included among public health programs of communities large enough to support them. All are valuable in a campaign against illness and disease, as one may verify by studying reports of municipal and private health agencies:

1. Quarantine.

2. The inspection of foods, of persons who handle food, and of places where food is prepared and sold.

3. The inspection of dairies.
4. The inspection of the water supply.
5. The disposal of sewage and refuse.
6. The destruction of insect carriers of disease.
7. A school health service.
8. Clinics, dispensaries, and a hospital service.
9. A laboratory service for the diagnosis and treatment of disease.
10. Immunization.
11. A program of health education.
12. The collection of vital statistics.

One unfamiliar with the diversified activities of the health officers of his city can profitably study the report of a health department. He will find the account interesting and convincing. It should be a stimulus to better personal hygiene.

Quarantine. Quarantine aims at protecting the well by isolating the sick. It is easier to quarantine a known case of infection than to ask the public to step aside when disease prevails.

In earlier times quarantine was of a general nature. Suspects as well as the sick were quarantined and the isolation usually continued for many days. Today quarantine is individual in nature. Suspects are examined bacteriologically and with reference to their known immunity to the prevailing disease, either because they have had the disease or have been immunized. According to the findings, the suspect is released or detained.

With the advance of scientific knowledge many quarantine periods have been shortened. We now know the length of time required for diseases to manifest themselves in suspected cases; we also know the length of time diseases are infectious after the patient's recovery.

The public needs to realize the importance of coöper-

ating with health officials who have charge of quarantining communicable disease. Quarantine rules should be strictly observed and all warning cards should be heeded. The legendary Achilles, with all his immunity to arrow wounds, finally fell a victim to them because he had a single vulnerable spot on his heel. Quarantine is one means by which society lessens the likelihood of disease overcoming its members at unguarded moments. Quarantine is a valuable health measure, but like many preventive measures, only one part of the program.

Food inspection. One of the commonest ways by which disease germs enter the body is by means of food. To some extent this means of transmission is controlled by methods of inspection now commonly practiced.

Inspection of cattle has become an important part of the health program because tuberculosis is so commonly transmitted from cattle to humans by means of infected milk and meat. Pork, too, is inspected as a safeguard to public health. Nearly all manufactured food products are nowadays inspected, as are the places where foods are manufactured. These include cold storage plants, canneries, dairies, markets, and restaurants. Handlers of food are also inspected so as further to protect the health of the public which, after all, can be no better than that of the individual.

Sanitation. Health officials now include sanitary science among their highly effective tools for fighting disease. This is partly due to the fine record of accomplishment in the conquest of malaria, yellow fever, typhus fever, cholera, typhoid fever, and hookworm, for which sanitary science is chiefly responsible. Sanitary science has taught us the importance of using only pure drinking water, and it has developed improved methods of water purification. It is teaching us how to dispose of sewage effectively.

It is promoting cleanliness of living and working quarters, of amusement places, and even of thoroughfares. It discovers improved methods of ventilation, and it insists upon the elimination of dust, noxious gases, and unpleasant odors. Much of the work now promoted by advocates of sanitary science was unthought of by our forefathers.

Coöperating agencies. Community health is by no means the responsibility of only local health officials. Public health work is not a one-man job; it is the work of the whole community. What is more, it is also the work of adjoining communities. Like individuals, communities are unable to live to themselves. Wherever there are contacts, there, too, are the possibilities of infectious disease. It is necessary, therefore, that public health officials have the active coöperation of all who can help to raise health standards of community life, for a healthful community life is the core of national strength.

No other nation does so much as the United States, either by means of coöperative activity or through financial support, to maintain public health. And credit for much of this must be given to the efforts of public-spirited citizens and privately funded organizations. The various health-promoting organizations meet real problems in a way that is helpful beyond measure, not only from the financial point of view but also **from** the point of view of moral support.

Some of the private organizations which promote public welfare publish various materials of value to teachers of health. Such materials may be had for the asking from the following: The American Child Health Association, 370 Seventh Avenue, New York City; The American Medical Association, 535 North Dearborn Street, Chicago; The American Red Cross, Washington, D. C.; The Eliza-

beth McCormick Memorial Fund, 848 North Dearborn Street, Chicago; The Life Extension Institute, 25 West Forty-fifth Street, New York City; The National Child Welfare Association, 70 Fifth Avenue, New York City; The National Committee for Mental Hygiene, 370 Seventh Avenue, New York City; The National Committee for the Prevention of Blindness, New York City; The National Dairy Council, 910 Michigan Avenue, Chicago; The National Health Council, 370 Seventh Avenue, New York City; The National Organization for Public Health Nursing, 370 Seventh Avenue, New York City; The National Federation of Woman's Clubs, Washington, D. C.; The National Tuberculosis Association, 370 Seventh Avenue, New York City; The National Congress of Mothers and Parent-Teacher Associations, Sixteenth Street, Washington, D. C.; The National Woman's Christian Temperance Union, Evanston, Illinois; The Rockefeller Foundation, 61 Broadway, New York City; The Russell Sage Foundation, New York City; The Commonwealth Fund, New York City.

The cause of public health is furthered not only by organizations which make that their single aim, but also by other non-medical agencies. These latter include parents, church congregations, schools, industrial managers, and fraternal organizations. Business clubs, too, such as the International Rotary Club, do much to promote the cause of public health in the community.

Most important of all the organizations and agencies mentioned above are parents and teachers. Their duty is to teach children and to inspire them to observe the laws of health. They, first of all and finally, must cause the younger generation to practice personal hygiene, to observe the health regulations of the community, and to follow the accepted health customs of society.

Today's outstanding health problems. There are two kinds of health problems: Those that have to do with the control of infectious diseases such as tuberculosis, and those that deal with diseases which medical authorities classify as non-infectious. In origin and character the latter differ from one another. Some are due to degenerative conditions within the body; others result from deficiencies of diet; still others result from heredity. Kidney diseases, rickets, epilepsy, and cancer are examples of non-infectious diseases; they represent the four different types of disease in this group.

Preventive medicine has met with much success in combating many infectious diseases; among those are smallpox, typhoid fever, diphtheria, scarlet fever, cerebrospinal meningitis, tetanus, rabies, malaria, yellow fever, plague, and syphilis. But the record of preventive medicine in combating diseases of the non-infectious group shows no such results. The reason is plain. Medical science is learning how to control disease organisms. It is powerless, however, to control human organisms. Bacteria can be controlled; men cannot be, so far as concerns personal hygiene. As a result public health authorities are giving non-infectious diseases more and more attention.

Tuberculosis—the Great White Plague—continues to receive much attention from public health workers, and deservedly so. It still has a record of nearly a hundred thousand deaths in the United States annually. Add to this the sickness, poverty, and discouragement, not only of the afflicted but of others in the family, who so often have to share the burden, and the toll of tuberculosis reaches figures that challenge our best efforts.

Despite the efforts of medical science to prevent and to cure it, influenza still strikes down strong and weak alike. Infantile paralysis also continues to withstand the

skill of the best laboratory technicians. The common cold persists in making man its agent in the business of spreading respiratory infections, many of them virulent, among all classes of society.

Among diseases of the non-infectious group, cancer, heart disease, kidney disease, mental diseases (including neuroses and psychoses), rickets, scurvy, and pellagra, the last three diseases due to food deficiencies, continue to shatter our national health record. Victims of diabetes are now being helped by insulin, a recent discovery. Some other diseases mentioned above, especially the food deficiency diseases, are being brought under control. The causes of others, cancer among them, are still unknown.

Some international aspects of health. A century ago nations were little interested in the health of other nations. Except in time of war, contacts were few and easily controlled. Today all is changed. Modern methods of travel bring people of different nations together frequently.

No national health program will ever be effective until it takes into account the health problems of the whole civilized world. Unless effective means are available to prevent, an epidemic in one foreign country may quickly make its way into our own and other lands. Health officials find it necessary to keep in touch with the health situation everywhere. Modern methods of communication, so valuable commercially, are even more valuable for informing health officers of the first sign of threatening disease. The world has at last become our neighbor. Community health protection becomes a world problem.

SOME SUGGESTED METHODS

Public Health Slogans

1. Public health begins at home.
2. The world is your neighbor.
3. *Public health largely depends upon personal hygiene.*

Use colored crayon to print these on the blackboard. Put one on the blackboard at a time, and so have material for several days' study. Discuss the slogans with the pupils, and make some pertinent comment about each. For example: 1. The isolation of the sick—when is it necessary? 2. The relations of people and of nations ought to be healthy as well as friendly. 3. Responsibility for community health rests upon each person in the community as well as upon the public health officer. Care for the public health cannot be delegated to somebody else. In some way or other it is the business of everybody. Vaccination immunizes the whole community.

Making a Notebook

Each pupil should have his own health notebook. In it he should keep class notes, assignments and surveys, newspaper and magazine clippings, verses or other lines for memorizing, drawings, health records, and all other items of interest that have been found suitable for developing better habits, attitudes, and ideals useful in the game of living. All material should be classified, organized, and indexed so that reference to it will be facilitated.

Pupils can make their notebooks interesting by preparing original dedications that have to do with health in some manner or other. A stencilled cover makes a book attractive. A note of interest will be added to a child's book by having parents, friends, and acquaintances write their names in the book when they have read all or part of the material that the child has gathered.

I Am the Enemy of Mankind

I have destroyed more lives than all the wars of the world.

I destroy more than six hundred thousand lives in the United States each year.

I steal in the United States over a billion dollars yearly.

I tear homes asunder: I snatch babes from the mother's breast.
I am more powerful than the combined armies and navies of the world.

I have burdened mankind since the dawn of history.

I spread misery and desolation. Innocent children are my special prey.

I bring sickness and death, yet few seek to escape me.

I destroy and maim: I give nothing, but I take all.

I destroy health and wreck homes.

I am relentless. I seek rich and poor alike. Both weak and strong, old and young are my victims.

I cause commerce to stand still: I depopulate cities and destroy nations.

I am *preventable disease*.

I Am the Conqueror of Preventable Disease

I am stronger than all the nations of the earth.

I am the co-worker of medicine and surgery.

I save thousands of lives each year.

I restore children to their parents.

I banish plague and pestilence.

I convert the fever-ridden jungles into health resorts.

I add years to the lives of thousands.

I am on guard all the time. My vigilance never ceases.

I bring cleanliness, good cheer, and wholesome living.

I make mankind happier. I bring prosperity. Towns spring up and grow under my protection.

I am necessary for the progress of the world. Trains and ships move under my protection.

I watch over the children in the schools, the soldiers in the camps and trenches, the sailors on the sea, and the people at home.

I am *sanitation*.*

Some Teaching Devices

1. **Health carriers.** This poster (See Figure 60.) pictures the different health carriers. Cleanliness, fresh air, sleep, fruits, vegetables, milk, sunshine, and exercise are health

*From the *Health Almanac for 1919*, published by the United States Public Health Service, Washington, D. C.

carriers. The purpose of the poster is to develop the thought that there are *health carriers* as well as *disease carriers*. It is the better plan to play with the carriers of health. Anyone who carries happiness, encouragement, sunshine, and helpfulness can be a health carrier.



Figure 60. Carriers of Health

2. **The keys of health.** Discuss the various kinds and shapes of keys and the uses to which they are put. Explain that officials sometimes present the "key to the city" to someone whom they wish to honor. This key has no intrinsic worth; it has only symbolic value.

Make several large keys of different shapes and sizes from red and yellow cardboard. Explain that these open the doors to community health and safety. The yellow

keys are bright with use. The red ones are rust colored; they are used but little. Keys rust if not used; so, too, do human beings, as stated by the old proverb, "Either I work or I rust."

Label one of the cardboard keys, *Pure Drinking Water*. Discuss the importance of a community's having a supply of good and pure water. If pupils are unable to suggest labels for the other keys, these may be used: *Clean Dairies, Immunization, Proper Disposal of Sewage, Quarantine of the Sick, Inspection of Restaurants, Immunization, Coöperation, Health, Sportsmanship, Sanitation of Public Buildings and Other Public Places, Destruction of Insect Carriers of Disease, Clinics and Hospitals, Fine and Imprisonment for Breaking Health Regulations*.

Make a large key-ring out of cardboard. On one side print, I WILL, on the other, I CAN. Put the keys on this ring and display it in the classroom for a few days.

Impress pupils with the notion that more than one person is required to use these keys successfully. Everyone in the community must turn these keys if the doors leading to community health are to be opened.

This key device may also be adapted to the teaching of personal hygiene to younger pupils. When that is done, the keys should be labeled with such captions as *Fresh Air, Sunshine, Rest, Exercise, and Nutritious Food*, because those topics are more easily discussed with younger children.

Suggestions for Home Work

1. **Health and safety puzzles.** These devices may be made at home by pupils, then brought to school, and used at odd times either as a sort of health lesson or as a profitable amusement after assignments have been completed. Pupils will enjoy making their own puzzles and exchanging their work with other children.

From a magazine or other journal select a picture that conveys some health or safety lesson. Mount the picture on a piece of medium-weight cardboard. Add a health slogan or other motto if desired. When the whole is dry, cut it into a number of irregularly shaped pieces. If a child makes more than one puzzle, he should number each piece on the back with a figure 1 for the first puzzle

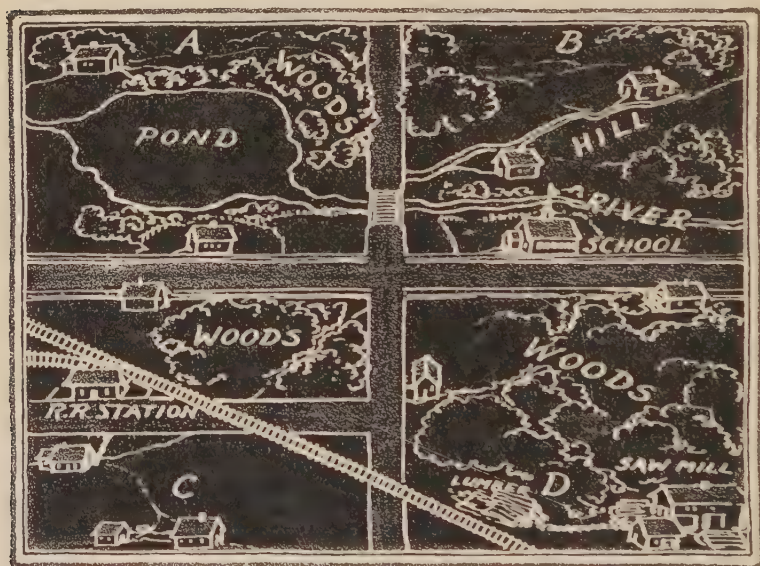


Figure 61. A Locality Map

made, a figure 2 for the second, and so on. The puzzle game consists in replacing the pieces so as to complete the picture. For convenience all pieces of any puzzle should be kept in a strong envelope when not in use.

2. Map making. The teacher should reproduce on the blackboard the map shown in Figure 61, or, better still, she should prepare a similar map of the locality roundabout her school building. Explain this map to the

pupils, then have each child make such a map for himself, using his parents' help if necessary.

Each child's map should show the following items of importance: (1) Location of the home; (2) route usually taken when going to school, showing streets and car lines crossed and indicating short cuts made through woods, fields, and alleys; (3) the school building.

Pupils should indicate danger spots along the route. They should make clear their method of getting to school; that is, by walking, by bicycling, by means of train, street car, or bus. They should indicate whether or not they have companions on any part of their trip, and also the approximate time required for getting from home to school.

The teacher should take up the maps one by one, especially the more interesting ones, and use them as a basis for discussing safety. Discuss the danger of crossing car lines and streets; of walking on railroad tracks and in the street; of going through alleys, woods, commons, and other lonely places; of playing about ponds and streams either in summer or winter. Explain that children should never cross water on the ice unless it has first been tested by an adult.

A Classroom Project

The following outline, developed on the blackboard, topic by topic, is a good way of making a comparative study of individual and community health.

a.

The Community

An organized group of
persons.

The Individual

An organized group of
cells.

Each group has laws that must be obeyed.

b.

Board of Health
Directs the campaign
against disease.

The Brain
Intelligence needed for
fighting disease.

In each case there must be centralization of authority.

c.

Sewerage System
Methods of removal and
their relation to disease.

Organs of Elimination
Importance of regular elim-
ination of body wastes. Re-
lation to health.

In both instances, the chief danger to health is improper disposal of body wastes. In the one case, the danger is to the community. In the other, to the individual.

d.

Health Inspectors
Discuss the duties of
health inspectors. Explain
the inspection of dairies,
stores, eating places, and
other centers likely to
spread disease.

The Special Senses
Sight, smell, and taste are
the body's chief sanitary
inspectors. Discuss the
importance of each for
the health of the individ-
ual; of the nose, for exam-
ple, in detecting odors.

It is as important to have inspectors in the battle against disease as to have sentries with an army.

e.

Clean-Up Week
Impress pupils with the
notion that so-called Clean-
Up Week in cities ought
to be the common custom
and not an occasion.

Clean-Up Day
Every day should be
Clean-Up Day for the
body. In fact, the body
should be cleaned up sev-
eral times each day.

Cleanliness is more than a matter of soap and water. There must be internal as well as external cleanliness.

f.

Public Health Warnings

Discuss the use of placards and other announcements pertaining to health and safety. Mention arm bands, quarantine signs, and safety signs. These have to be printed in many languages.

Nature's Health Warnings

Nature gives warning of danger by means of coughs, sneezing, fever, rashes, and in other ways.

g.

Laboratory Preparations

Diphtheria antitoxins, vaccines, and other serums. Used for prevention and treatment.

Body Antitoxins

Consider how the body makes its own medicines. Emphasize the point that much time is required by the body for making its own antitoxins, and that consequently the body may be too late to combat disease effectively in any given instance. The safer plan is to depend upon antitoxins prepared in laboratories.

The teacher should make clear to pupils that, unaided, even a healthy body is not always able to fight a winning battle against disease. Experience with some diseases develops a natural immunity, as in the case of measles, scarlet fever, and whooping cough. Another method of combating disease is to immunize the body by artificial methods. These include vaccination and the use of vaccines and serums. In fighting disease, one who depends solely upon good health is like a soldier who has

neither gun nor ammunition. The desirable combination is health and help, the latter to consist of artificial immunization and other external aids.

h.

Need for Coöperation

If the health of the community is to be maintained, all citizens must work toward that common end. There will always be a few slackers.

Need for Physiological Harmony

The cells of the body and the body's organs always do their work faithfully, provided they are kept in health. The body has no slackers, except, at times, the brain.

It is never enough merely to talk matters over; there must be physical as well as mental activity.

Surveying stores and markets. With a little preparation, the teacher can explain to pupils how they may judge the standing of a store, market, eating place, or soda fountain from the point of view of hygiene and sanitation. This is valuable instruction for children.

Pupils who make such surveys, which amount to but little more than the use of knowledge learned in school coupled with discreet observation and common sense, should discuss their findings at home rather than in the classroom. If discussed in the classroom, some statements may give rise to misunderstandings and hard feelings. It is the duty of the board of health to deal with unhealthful conditions in the community. The school should never attempt to evaluate community health conditions or to suggest measures concerning them unless all other measures have failed to function. It is, however, the duty of the school to instruct pupils how to become sensitive to and aware of bad sanitary conditions, and so to lead them to try to secure results through their parents and the properly constituted officials.

SUMMARY

Public health measures that are intelligently and conscientiously enforced serve the double purpose of conserving and promoting the health of members of a community and through them, the community itself.

The first duty of the public health official is to see to it that the health of the citizens is conserved. Every individual needs health protection because, unaided, he cannot protect himself from his fellows who may be carriers of disease. Nor can the individual, unaided, afford the necessary health protection. He can assure himself of it, however, by paying his share of the cost of providing pure drinking water; by paying for the eradication of disease-producing insects and their breeding places; by providing for the construction and maintenance of sanitary sewerage systems, the inspection of foodstuffs, and the support of health officers. Public sentiment, sanitary science, and legislation are factors in conserving the health of citizens, all needing the support of each one of us.

The present efforts of public health agencies are directed toward raising individual health standards by carrying on a fight against disease and insanitary conditions of every kind. This is accomplished by means of general public health education, by health work in schools, by clinics, dispensaries, hospitals, and other activities known to all.

The private agencies that assist in furthering public health develop their programs in collaboration with local health authorities and in conjunction with the activities of municipal, county, state, and federal agencies. But even with this display of effort, which at times leads one to believe that others are more interested in our health than are we ourselves, no lasting achievement can be accom-

plished unless each individual coöperates to the fullest extent. In the final analysis, public health is merely the health of groups of individuals.

Questions for Further Consideration

1. How do public health problems of city and country resemble one another? How do they differ?

2. Do you believe that the efforts of school authorities to secure a high per cent of attendance are at times inconsistent with the promotion of better individual and community health? Explain your answer in detail.

3. A school is a community. Should it not, therefore, be organized so as to conserve and promote the health of its members, as other communities are organized? What suggestions can you propose for furthering such an organization of the school?

4. Make a list of the benefits that public health service provides for you, and which your grandparents did not receive.

5. One of the difficulties with which public health measures have to contend is ignorance. Congestion of population is another. What are the special difficulties in your locality?

6. There is a growing sentiment on the part of public health officials that schools should not be closed ordinarily because of the presence of an epidemic. Are you familiar with their reasons? What is the practice in your community?

7. Dr. H. W. Hill says that "Health is a product of immunity, not the cause of it." In view of the above, what should be our attitude toward immunization against disease?

References for Further Reading

- Allen, W. H., *Civics and Health*. (Ginn and Company.)
Armstrong, D. B., *Community Health: How to Obtain and Preserve It*. (National Health Series.) (Funk and Wagnalls Company.)
Crumbine, S. J., *A Ground Plan for National Health*, published in *Hospital Social Service* for March, 1927. (9 E. 37th St., New York City.)
Wood, T. D. and Rowell, H. G., *Health Supervision and Medical Inspection of Schools*. (W. B. Saunders and Company.)
Community Health Organization, published by the American Public Health Association, New York City.
Eighth Annual Report of the Commonwealth Fund, published by the Commonwealth Fund, 1 East 57th Street, New York City.

CHAPTER XXII

ADDING HEALTH TO THE THREE R'S

The three R's plus. Adding health to the three R's is by no means a simple problem in arithmetic. The process involves at least seven factors. These are pupil, teacher, janitor, doctor, dentist, nurse, and parents. To be sure, health can be added to the curriculum by using fewer factors, but no matter how valuable short-cut methods may be as time-saving devices, they do not give as good results in "Health Arithmetic."

Those who use modern methods of teaching do not, of course, merely add health to the three R's. Rather, it is integrated with the curriculum; it is built into the program, not on it. Presented in this manner, health lightens the educational load. The introduction of health study into the school's educational program helps to improve the pupil's environment, promotes his physical welfare, and increases his percentage of attendance. Health added to the three R's acts somewhat as yeast acts; it makes all study function more advantageously.

Health education. Today the most successful health education programs are those that are well correlated with other subjects of the curriculum, and with the pupil's extra-curricular activities. As in the case of other subjects, methods and devices for arousing interest in health study include dramatization, projects, the making of posters, charts, and graphs, excursions and surveys, health clubs, exhibits, pageantry, health games and contests, the use of the camera, and campaigns such as that of "Good Posture Week." (See page 157.)

Nowadays pupils are taking home from school much

interesting and practical health knowledge that cannot fail to secure attention and coöperation of parents. This is important because the child's health largely depends upon home conditions. When pupils take work home, parents are often influenced to attend special school activities and so see at first hand the newer methods of health education. These include health examination of pupils, health instruction, and health activities in school and out.

Health supervision. It is not enough for pupils to know the laws of health. It is equally important that a physician shall know the condition of the pupil's health. And that physician may be either the family doctor or the school doctor. But the pupil's knowledge of health laws and the doctor's knowledge of physical conditions are in themselves of little value unless they are conjoined with a zeal for health improvement. The old-fashioned health instruction lacked inspiration just as the old-fashioned medical inspection lacked vision.

Beginning with pupils, health supervision has extended from them to teachers and janitors. The state of health of these latter is a factor that needs to be reckoned with in connection with the health and education of children. This is especially true of teachers. With our present scheme of compulsory education, none but the physically well and mentally wholesome should be allowed in classrooms. Sick children who are a menace to the health of others are kept out of school. Teachers ill of serious mental or physical disorders ought also to be relieved from school duties until they can attend to them without endangering the health of pupils.

Health supervision in larger cities is organized as a school health service having its own personnel. The staff usually includes physicians, dentists, nurses, social workers, psychologists, psychiatrists, and other needed ex-

perts. The latter often include a speech correction expert.

The hygiene of instruction. Fatigue is the bane of education. It causes lack of attention, loss of interest, mental confusion, wasted time and effort, mistakes, bad discipline, and lowered physical tone. It handicaps the teacher by increasing her work and diminishing the results she secures from her class.

Since fatigue is physiological, no one may escape it. Rest itself, as well as work, fatigues when carried beyond normal limits. School programs may be so arranged, however, and classroom conditions so ordered, that fatigue scarcely develops. Pupils in good health do not tire of classwork when lessons are kept within reasonable time limits. They rarely tire when there is variety in the sequence of lessons, and interest in the instruction. Ordinarily they do not tire when the school room is well ventilated, when seats and desks are properly adjusted, when they are given a reasonable amount of physical freedom.

Whenever fatigue becomes evident in the classroom, the teacher must look to one of five conditions for an explanation:

1. She may be uninteresting; she may be teaching beyond the ability of her pupils; she may be tiresome because of some personal peculiarity such as a high-pitched voice of which she is completely unaware.

2. Ventilation may be poor; the classroom may be too warm and the air may be circulating sluggishly.

3. The furniture may be poorly adjusted; children who are physically uncomfortable are almost certain to be restless and inattentive.

4. Lessons may be too long; they may follow one another with too little change; they may come at the wrong time of day.

5. The pupil may be ill; he may be getting less sleep

than is necessary ; he may be working too hard ; he may be poorly graded ; he may be suffering from some such physical defect as poor eyesight or defective hearing.

Teachers should be on the alert to note the first evidence of fatigue. A few moments of relaxation such as a short setting-up drill or other method of refreshing the class, a game, for example, will usually renew interest in the lesson if undertaken in time.

Hygiene of the classroom. The condition of the classroom affects the health and activities of pupils and teacher. First of all, the classroom should be clean and reasonably free from dust. As found in the classroom, dust is not serious from the point of view of bacterial infection, but it is an irritant to the respiratory tract, it causes sneezing and coughing, and it increases the number of fresh bacteria in the air. Dust should therefore be kept at a minimum ; to insure this, dusting should be done with an oiled or damp cloth, and preferably after school.

Ventilation is always important in any consideration of making a room habitable. As we have seen, the body's ability to regulate its heat depends upon the circulation of air. Further, air should have a temperature of between 65 degrees and 68 degrees Centigrade, and it should be about normal in humidity. If air contains too much moisture, the body cannot satisfactorily perspire and so eliminate heat.

School hygienists advocate natural ventilation, either as the sole means of ventilation or supplemented, if necessary, by artificial means. For breathing, the best air is fresh air, not air that has been warmed and driven into a room at uniform temperature and rate, no matter how pure the latter may be. Where possible, windows should be raised from time to time, and the classroom freely ventilated. During this period, pupils may be active.

Teacher and janitor should of course coöperate willingly in achieving the best classroom ventilation. One should not fruitlessly try to heat all outdoors, nor should one insist on closing windows too tightly or too much of the time. The pupil's health must always receive first consideration.

Classroom equipment. Classrooms should be light but not bright; there should be no glare. Windows should be so arranged that there are no disturbing shadows. Window glass should be clean. Desks farthest from windows should always be within range of direct daylight. It should be possible to project an imaginary straight line from the desk through the window and onward to the horizon without that line's being intercepted by an obstruction of any kind.

Furniture, of the adjustable type, should be adjusted. In every classroom there should be at least one row of adjustable seats. The use of skids under a desk that is too low, or the use of a box as a footstool under a seat that is too high, helps to solve the problem, but never satisfactorily.

The classroom, which is the teacher's workshop, should be equipped with necessary tools. These include, among other things, slate blackboards, kept clean all the time; books printed clearly from type of the proper size and on unglazed paper; an automatic pencil sharpener. Every classroom should be provided with a good thermometer, which should be read at stated intervals as part of the day's routine. The readings should be recorded upon a suitable space reserved for that purpose on the blackboard. Attractive pictures and posters, both of which are important for creating an atmosphere of happiness and helpfulness, should adorn the classroom walls.

Rural school sanitation. Sanitation of the rural school

plant—the school building, outhouses, school yard, and water supply—is the keystone of the health education program of the rural school. If pupils have no facilities for washing their hands after visiting the toilet and before eating lunch, much of the health instruction given in the classroom will be wasted. If drinking water is handled in an insanitary way, efforts of teacher, doctor, and nurse to protect the health of pupils will be purposeless, no matter how good the water itself may be. If toilet seats become insanitary, pupils will regard cleanliness as an impossible ideal. If the walls about the school plant carry indecent pictures or writing, it will be difficult to maintain a wholesome moral atmosphere among the pupils. If the school yard is muddy, and if the school has no doormat, dirt will be tracked into classrooms and later make them unsightly and insanitary. Dust from the playground, although ordinarily not a health menace, causes much unpleasantness, especially on the windy days of spring and fall when schoolroom windows are open.

Such conditions as those mentioned cannot usually be amended by the teacher alone; even the janitor is often powerless to improve or correct them. The solution of the difficulty lies largely within the control of school authorities. Since this is true, the teacher should exert every effort to create among patrons a sentiment that favors the improvement of conditions about the school plant. Further, she should enlist the interest and co-operation of all other members of the community. And if, finally, she is unable to get proper action from school authorities, she should emphasize the importance of personal hygiene. Thus, by raising the health standards of the pupil, she may in some measure raise those of his parents and their acquaintances. In this manner the school environment may finally be improved.

SOME SUGGESTED METHODS**Health Slogans**

Problems in health addition are easiest in youth.

Ability plus purpose plus health equals success.

The wise seek Nature's help in adding health to life.

Health is a skilled mathematician who adds blessings to life.

Everyone should work one example in health addition every day.

Suggested Blackboard Material

Problems in health addition. Relate the work in health addition to work in arithmetical addition. The following blackboard games for use in arithmetical addition are useful for beginning this exercise.

A. Beginning with the first pupil in a row, have pupils in turn leave their seats, hurry to the blackboard, write a number (in a column), then return to their seats. The last pupil in the row is to make the addition of the numbers written and to set down the sum. Rows should compete by two's so as to select winners.

B. Draw an outline of a flight of steps on the blackboard. Beginning with the first pupil in a row, have pupils hurry in turn to the blackboard. Starting with the highest step, and proceeding downward, each pupil writes a number (less than 10) on a step. The pupil who last goes to the blackboard writes on the lowest step the sum of all numbers that have already been written. The same method may be used with ladders drawn on the blackboard, one for each row of pupils.

C. Outline a river on the blackboard and place in it as many stepping-stones as there are pupils in a row. Following the method described above, each pupil writes a number (less than 10) on a stepping-stone. The last pupil makes the addition, as before, and writes the addition on the "bank" of the river.

In playing the number games described here, pupils who fail in their tasks are said to "stumble on the stairs," "fall off the ladder," and to "fall into the river." From time to time the pupils in a row should be shifted about so that the task of making the addition will not always devolve upon the same children.

Any one of the games already mentioned may be followed by a game in "health addition." As shown by

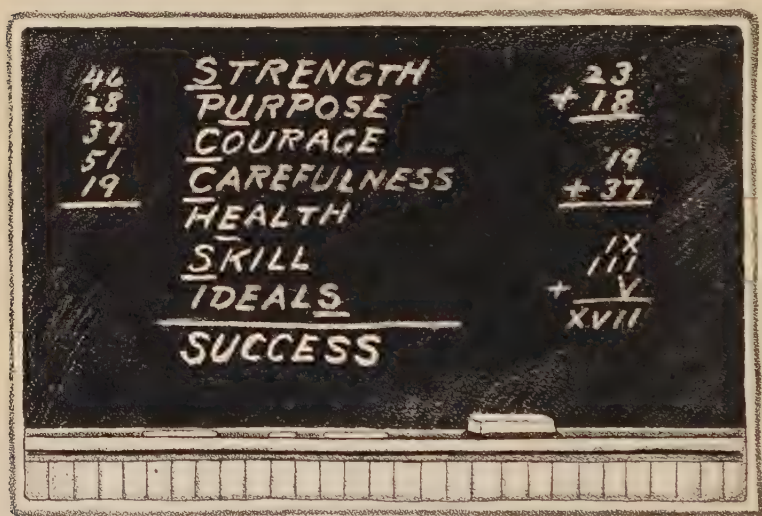


Figure 62. The World's Oldest Problem in Addition

Figure 62, the words STRENGTH, PURPOSE, COURAGE, CAREFULNESS, HEALTH, SKILL, and IDEALS should be lettered on the blackboard.

Ask pupils whether or not any one of them can add this column. Explain that it is not always easy to add health to the other things of life, and show by using the example of Roman numerals that, although adding letters is a difficult matter, it can at least be accomplished. Then, beginning with the topmost word, take one letter

from each, as follows, underscoring the letter used in each instance. Take S from STRENGTH, U from PURPOSE, C from COURAGE, C from CAREFULNESS, E from HEALTH, S from SKILL, and S from IDEALS. The letters of the word SUCCESS, which makes the addition, should be printed with yellow crayon so as to set them off from the white crayon letters used above.

Some Classroom Devices

1. **A health record.** The following lesson may be correlated with music study if the school has a reproducing machine. Begin by playing parts of a number of musical selections of different kinds. Ask pupils to tell how the various selections affect them. Pupils will note the characteristics of a stirring military march, of a dreamy waltz, of a soothing lullaby, of weird Oriental melodies. They will sense the rapid rhythm of Spanish dance music, the solemn measures of a funeral march, and the abandon of modern jazz.

Explain, then, that you have a new record, one quite unlike all the others, one which is so valuable that it should be owned by everybody. When pupils show their eagerness to see this new record, show them a cardboard disc cut to resemble the ordinary disc record, as shown by Figure 63. Bring out the following points one by one, and as each point is made, write it on the blackboard. Leave this list on the blackboard for a few days.

1. A health record cannot be worn out by use. It improves with use. Abuse, however, will wear it out rapidly.

2. A health record may be played from the inside outward or from the outside towards the center, as other records are played. (Health is both an internal and an external matter.)

3. People who have no health record are usually willing to give all they possess in order to own one. Those who possess a health record often prize it but lightly.
4. Health records are useless except when played.
5. Youth is the best time to obtain a health record.
6. The patent on all health records is held by Mother Nature.

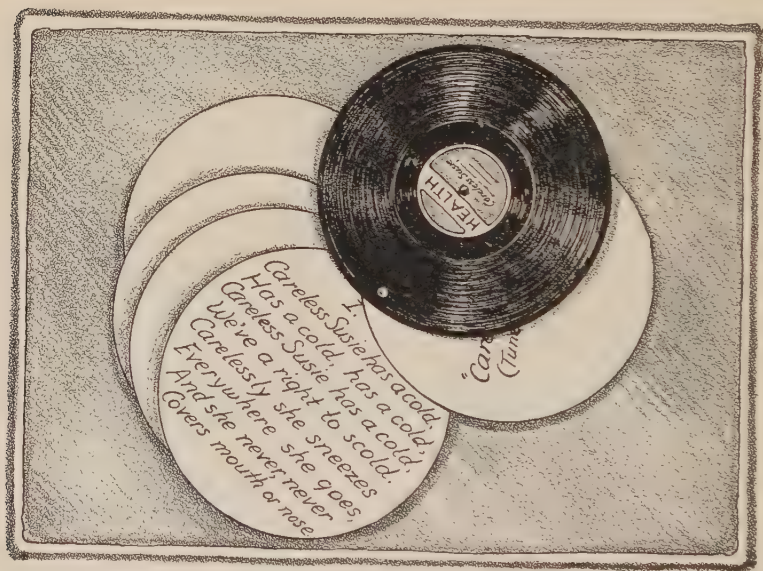
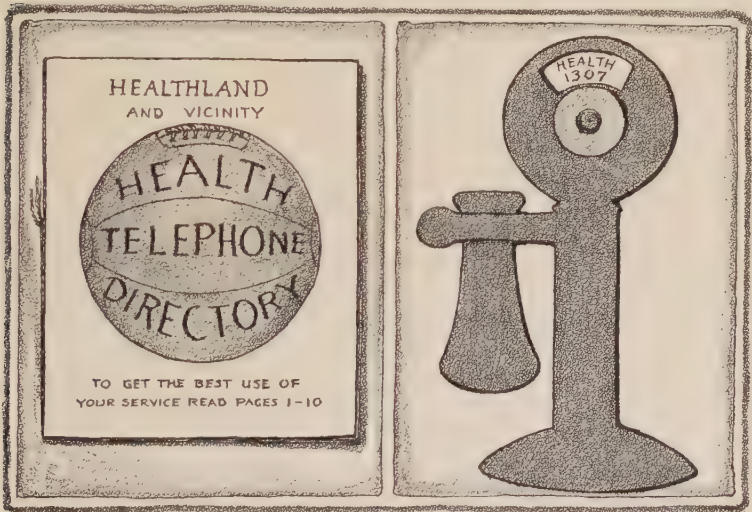


Figure 63. A Health Record

7. Although the health record is the oldest of all, it remains the most popular.
8. Another name for a health record is "habit."
2. **A health telephone directory.** By means of a little resourcefulness, this lesson may be correlated with the work in English. Begin the work by having pupils discuss various methods of communication now commonly used; these should include signs and signals of different

kinds, speech, writing, telegraph, telephone, submarine cable, and the radio.

Discuss the part that each of these has played in the development of civilization. Signs, including placards of various colors, are used to show the presence of contagious disease and to establish quarantine. By means of lectures and other health talks, speech also furthers the cause of health. Health and sanitation are promoted



Figures 64-65. A Health Directory and Telephone

by means of written and printed books, pamphlets, bulletins, and other matter. The telegraph and telephone serve health interests by enabling people to communicate the news of a catastrophe when it occurs, and by serving as a means of calling for help at times of distress and emergency. The radio is used for broadcasting information regarding every conceivable topic related to the promotion of health and the submarine cable helps to keep nations in touch with one another.

By means of the above introduction, and such other material as will suggest itself to teacher and pupils, one may prepare an excellent approach to the presentation of the "health telephone" device explained below.

Make a booklet of a few folded sheets of paper. At the top of each page write the name of a telephone exchange and the number of a telephone, as, for example, "Health — 1 3 0 7." On each page write out a few health principles. Ten pages will be enough. (Figure 64)

Make a telephone out of cardboard, as shown by Figure 65. Fasten to the back of the dial, with a pivot, a circular disc with numbers corresponding to the numbers of the health principles in the booklet. When using this device, have a pupil turn to a given number, which may be read through the opening on the telephone dial. When the pupil calls out his number, another pupil opens the "health telephone directory" described above, and reads the health topics that appear on the page indicated by the number called. Those topics should then be discussed by all the pupils. (It should be obvious that the numbers on the pages of the "health telephone directory" should correspond with those placed on the dial of the makeshift telephone.)

An interesting variation of the use of this device consists of having each pupil prepare his own "health telephone directory" as a home assignment. Pupils may make drawings in their books, or they may paste in clippings and pictures that have to do with health. When using these "directories" in class, one pupil may call a number, and another may read from that page of his "directory" indicated by the number called.

The "health telephone" device furnishes a good opportunity to review many topics of hygiene, sanitation, and safety. Because of its novelty, the device gives variety to

the sometimes dull procedure of teaching health and safety facts.

SUMMARY

Adding health to the three R's, that is, including health among the subjects of instruction, is one thing; making health one of the pupil's habits of life is quite another. It is easier to do the former than to achieve the latter. In order to get the pupil to include care of his health among his activities, it must be related in some helpful way to his dominant interests. These include athletic ability, leadership, physical prowess, the admiration of companions, physical appearance, and comfort. All these are dominant interests of youth. At that period of life, however, health is not a dominant interest at all. Consequently it must be related to the foregoing if it is to find a place among the purposeful acts of the child.

With the great mass of material for teaching health now available and constantly increasing, resourceful teachers, alert to the possibilities of new methods, plans, and devices, should have no difficulty in presenting health attractively and effectively. And not alone are devices increasing in number. The principles of health teaching are daily being more clearly defined, and every year finds a greater number of teachers more capable of using both devices and principles because they have enjoyed training of a superior grade.

For the completely effective teaching of health, only one thing seems now to be lacking. The background of interest and inclination among pupils and parents is too slight. And so far as concerns the child, it seems likely that his background can never be satisfactory unless improved by his parents. For the child is by the very nature of the case utterly unable to control home conditions, and it is these that influence not only his attitude

towards health but also the effective utilization of whatever principles of health and safety he may acquire in the training received at school.

If the home fails to give suitable direction to the pupil's ideals of health preservation and improvement, then there is little likelihood that health teaching will ever be much more effective than it is at present.

Teachers who expect to teach health effectively must give much thought to improving the child's health background; it is essential that they affect the pupil's home, not alone through schoolroom assignments but in some personal fashion. If teachers cannot do that, then they must be resourceful enough to intrigue parents into coming into the classroom. Whatever may be done, the teacher must use tact effectively and she must individualize much of the health work that she has to do. She must, in any event, coöperate with every available active health agency.

Questions for Consideration

1. When school furniture is not fitted to the child who occupies it, is the effect most pernicious for the child's posture, for his eyesight, or for his attitude towards attention and discipline? Explain in detail and cite examples.
2. Suggest methods of correlating health and safety teaching with other subjects of the curriculum.
3. What practical means may the teacher use to maintain her physical and mental health despite the strain to which she is subject?
4. Health education programs recognize three distinct phases of health activity in the modern curriculum; health protection, health instruction, and health promotion. Discuss these three from the standpoint of school hygiene and sanitation.
5. Which do you consider more important in securing good posture—furniture, or ventilation? Explain.
6. What other factors need to be considered besides size in assigning seats to pupils? There are at least two other physical

reasons, and both may escape the teacher's attention unless each pupil is given an adequate health examination.

7. The practice of fumigating or disinfecting school buildings as a routine measure for preventing the spread of infectious disease is being discontinued by many boards of health. Experience and experiments seem to show that most infectious diseases are spread by direct contact between individuals, or at least by close proximity. In lieu of room disinfection by means of germicidal gases, what suggestions have you to make for keeping the diseases of childhood in check?

8. Insanitary and obsolete school toilet facilities have an unfavorable influence upon morals, health, and educational ideals. What are some practical ways of solving the toilet problem?

References for Further Reading

- Andress, J. M., *Health Education in Rural Schools*. (Houghton Mifflin Company.)
- Ayers, M., Williams, J. F., and Wood, T. D., *Healthful Schools: How to Build, Equip and Maintain Them*. (Houghton Mifflin Company.)
- Dresslar, F. B., *School Hygiene*. (The Macmillan Company.)
- Kelly, H. W. and Bradshaw, M. C., *Handbook for School Nurses*. (The Macmillan Company.)
- Rapeer, L. W., *Essentials of Educational Hygiene*. (Charles Scribner's Sons.)
- The Child Health School* (School Health Studies, Bulletin No. 2), Bureau of Education, Department of the Interior, Washington, D. C.

CHAPTER XXIII

WHAT OF THE FUTURE?

Tomorrow's health. Few topics excite greater curiosity than those which speculate about the conditions of human existence in the near and remote future. Always that question piques the curiosity of thinking men. Some attack the problem intelligently; they go about solving it by scientific methods. Others, now as ever, look to the stars or gaze at a crystal ball or consult the clairvoyant to find an answer to their query. We may reflect upon the wisdom of these methods by recalling that Nature's secrets are revealed only to patient searchers after truth.

Those interested in human welfare are always eagerly asking what the future will do for promoting the health of people and for extending their length of life. Is the future bright with promise of better health for a greater number? Will life then be greater in quantity and richer in quality? What, truly, does the future hold of health for the nations?

The trend of life. As we have seen, in modern civilized countries, the trend of life is definitely towards a lengthening of man's average span of existence. So far as concerns statistics, the average span of life has been lengthened by the saving to life of infants and children. Scientists have not been able, however, to affect a lengthening of life-span by increasing the number of years towards the close of man's life. In other words, the young person of today may expect to live longer than did his father or grandfather. But the middle-aged person of today may not expect any such proportionate lengthening of life-

span. The bacteriological diseases, which are chiefly responsible for the mortality of children, are now largely under the control of medical experts. The physiological or degenerative diseases, which chiefly cause the death of adults, are not so well controlled.

The factors of longevity. The two factors which determine man's length of life are heredity and environment. Man inherits the vitality momentum that carries him through life; his environment determines the amount of resistance he must meet in living out his days. Hygiene and sanitary science are helping to reduce the environmental resistance that every human being must meet.

Health education can help us to make the most of our inheritance; it can make clear to us how we may make more out of life, and with less effort, and it will tell us how we may avoid that wear and tear which so often brings life to an untimely end.

So far as concerns length of life-span, the New Zealanders seem to be the favored of the earth. Australians rank next, and after them, the Scandinavians. According to statistics, people of the United States, of England, and of Wales seem to be equally favored, for in all those countries the average length of life is about fifty-eight years. India foots the list so far as concerns the expectancy of life; for the people of that country the average length of life is only twenty-two years. A close study of vital statistics, represented only summarily by the above statements, seems to indicate that prosperity and education are to a large extent favorable determiners of longevity, and that they also conduce to an expansion of life as well as to its extension.

A fact not without interest and significance is that people who live to be old often live to be very old. Statistics of insurance companies show that persons who live

to be seventy-two years of age have an average age-expectancy of about nine years more, and that those who survive to the age of eighty-two have an average age-expectancy of five additional years. Statisticians estimate that as a result of modern methods of preventive medicine the average life-span of the near future will be somewhere between seventy and seventy-five years. And this lengthened life-span will have as accompaniments an increased span of activity, of usefulness, and of health. It is these latter which make the endeavors to protect the normal life-span so truly worth while to the individual.

Important work ahead. Those who keep abreast of the developments of modern science can readily see the changes that will be brought about in the health policies and program of the future. Diseases caused by toxic bacteria are being controlled in a large degree by scientific methods. Already smallpox, typhoid fever, scarlet fever, diphtheria, malaria, yellow fever, cerebro-spinal meningitis, cholera, bubonic plague, hydrophobia, and lockjaw are thoroughly controlled. By the combination of hygienic and therapeutic measures, tuberculosis, measles, and whooping cough may now be partially controlled. As yet, some few other diseases, serious and of wide prevalence, among them influenza, pneumonia, and infantile paralysis, are seemingly as powerfully destructive as ever they have been; however, there is reason to believe that they, too, will presently be under the control of scientific medicine.

Since, therefore, encouraging success has rewarded the investigations of those who devote their attention to the study and control of diseases of bacteriological origin, more time is now available for an investigation of the so-called physiological or degenerative diseases which work such havoc among the middle-aged and old. At least one

great foundation is already concentrating the attention of its investigators and specialists upon the nature of the degenerative diseases, and in various countries hospitals are now being devoted to the handling and study of patients with diseases of the degenerative type.

Among the non-infectious, or degenerative, diseases, cancer and diseases of the heart and kidneys seem to be most prevalent and to cause greatest mortality. Scientists are not completely agreed as to the cause of these diseases. Some are of the opinion that increased mortality from diseases of the kidneys and circulatory system is caused by the stress of modern life. Others contend that because people nowadays live longer, the average life extending into the years between fifty and sixty, the likelihood of death from degenerative disease rather than from infection is a normal condition. Whatever the cause, all those who do research work in medicine and the related sciences are making every effort to determine it.

The future of mental hygiene. Aside from the control of disease and the lengthening of life, which just now engage the attention of scientists, there is another problem that is deeply rooted in the social life of the people and one that has great bearing upon the future of the race. That is the problem of feeble-mindedness.

The problem of feeble-mindedness is to be solved by the joint use of medical, educational, institutional, and legislative resources. And even with the forces of these four agencies combined, no satisfactory solution seems at present to be in sight.

Those who are plainly feeble-minded can be cared for in a fairly satisfactory manner even now; that is, in a manner satisfactory to themselves, to their relatives, and to society at large. The menace to social welfare comes not from them, but from the so-called "borderline" cases

which defy recognition and so escape care and treatment. The slightly feeble-minded go about much as do normal persons, but they increase future generations by producing mental defectives who later become an additional burden to society. Intelligent people who realize the social menace of the feeble-minded are nowadays making certain, so far as they possibly can do so, that the blight of feeble-mindedness does not enter their own strain through union with those whose lineage bears taint.

The problem of drugs. Another problem that is intimately related to the health preservation program of today is the drug evil. The use of habit-forming drugs seems to be constantly on the increase, and because it works in a vicious circle of relationships it is very difficult to control. So far as concerns the drug evil, both legislative and educational forces must attack it with renewed strength and determination if any considerable progress in controlling it is to be made in the coming years.

Man can safeguard a normal, healthy body, and live happily and healthfully, if he will give due attention to health examinations, and if he will purposefully and actively coöperate with physicians and health authorities. He will improve his chance to continue living happily if he will avail himself of the safeguards provided by modern methods of immunization, and, if he will practice moderation in all things (except during those periods when circumstances demand an unusual output of effort), he will spend his days with little vexation to himself or trouble to his neighbors.

SOME SUGGESTED METHODS

Healthgrams

Live leisurely.

Health attention promotes life extension.

'Tis not enough to look ahead, one must think ahead, also.

Classroom Devices

Dental hygiene. Secure from some magazine a picture of boy or girl and mount it upon cardboard. The larger the picture the better. (See Figure 66.) With a sharp knife, cut a curved slit in the mouth so that the teeth may show (a). Next, prepare a circular disc (b) and place on it, first, a strip of red paper to represent lips; second, a piece of black paper or else color the disc

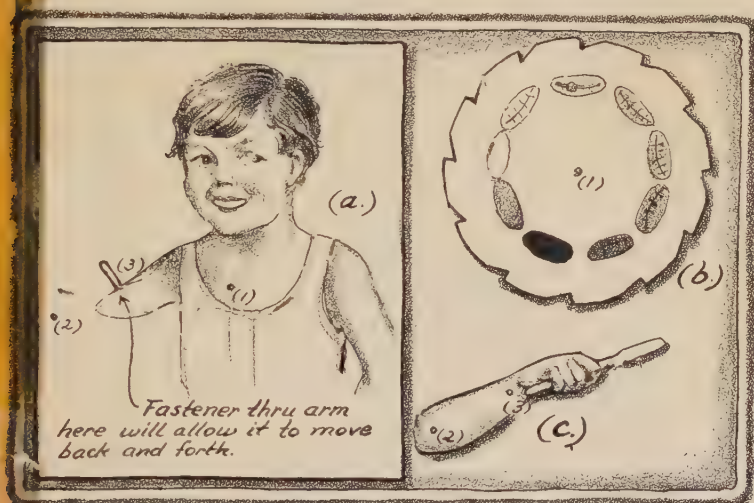


Figure 66. Details of Dental Hygiene Device

black; third, a drawing of dirty teeth; fourth, a drawing of teeth a bit whiter, and so on, showing in all several sets of teeth. As the disc is turned on the back of the cardboard device, the different drawings show through the open mouth. Finally, make a drawing of an arm and hand holding a toothbrush, paste it on cardboard and cut out (c). The disc and the arm are put in place, using brass top fasteners, and the device is ready for use. (See Figure 67.)

Show the device to the class with the boy's red lips showing. Ask the class to guess what kind of teeth this boy has. Quiz the pupils upon the reasons for their answers. Turn the disc, and show that the lad has black teeth. Discuss the care of the teeth. From the back of the device, move the arm so that the teeth are brushed. At the same time, turn the disc again, showing that the



Figure 67. Dental Hygiene

teeth are beginning to look whiter as the result of tooth brushing. Brush the teeth some more, turn the disc again, and finally, show that the teeth are white as they should be. Impress upon the class that white teeth get discolored again if they are neglected, and show by turning the disc still further that discolored teeth decay and have to be extracted.

Nutrition. Prepare a poster (See Figure 68.) with a milk bottle in the center. Explain to the class that this is the Fountain of Youth—it gives health and strength. There should be a slit in the top of the bottle through which is pushed a cut-out of an athletic boy or girl,

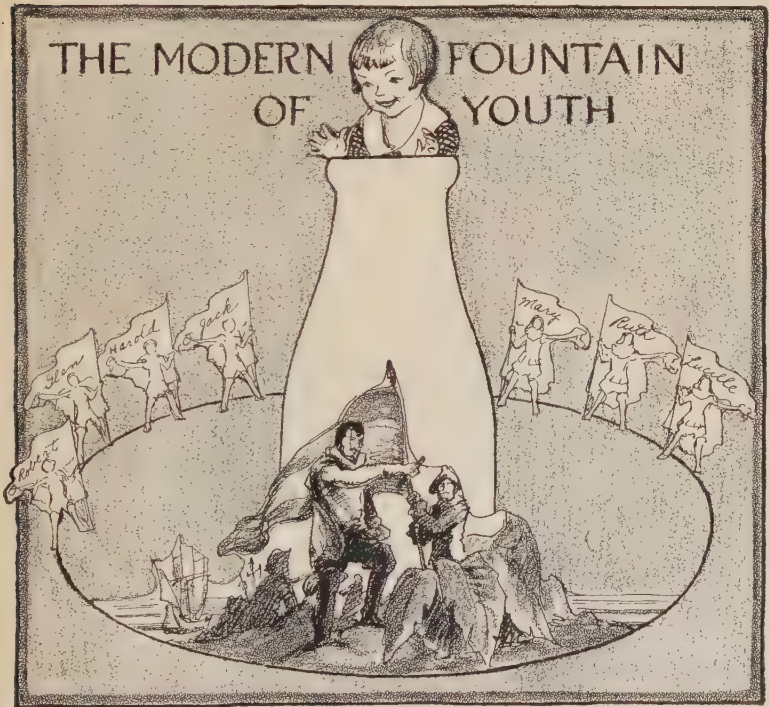


Figure 68. Milk—The Fountain of Health

clipped from some magazine or drawn by the teacher and pasted on stiff cardboard. Tell the class that this figure has discovered the Fountain of Youth which Ponce de Leon spent his life in searching for without success. Would the pupils in the class like to do as explorers did in the days of Columbus when they discovered new land,

and plant a flag to show that they, too, have made a discovery? Show the class two cut-outs of explorers with flag in hand (See Figure 69.) and tell them that each boy and girl who discovers the Fountain of Youth, *Milk*, and drinks of it three times a day and every day may have his or her name or initials placed on the flag of a similar cut-out and put in the circle on the poster where all "discoverers" of the Fountain of Youth are to stand. Pupils should have the privilege of coloring their cut-out.



Figure 69. Health Explorers

The amount of milk required to discover the *Fountain of Health* will depend upon local conditions. The requirement should be within the reach of every child. The story of Ponce de Leon should be told and the lesson brought out that there is no one Fountain of Youth—*exercise, rest, fresh air, fruit, and right habits of living* are also Fountains of Youth: it is necessary for anyone who wants to retain his youth as long as possible and to

be as strong as possible, to visit all of these fountains. They will not give eternal youth, but they will help greatly toward making for a happy, healthy, helpful childhood, youth, and manhood.

Health habits. The "Dipper of Health" poster provides an interesting method either of presenting or reviewing the important facts in personal hygiene.

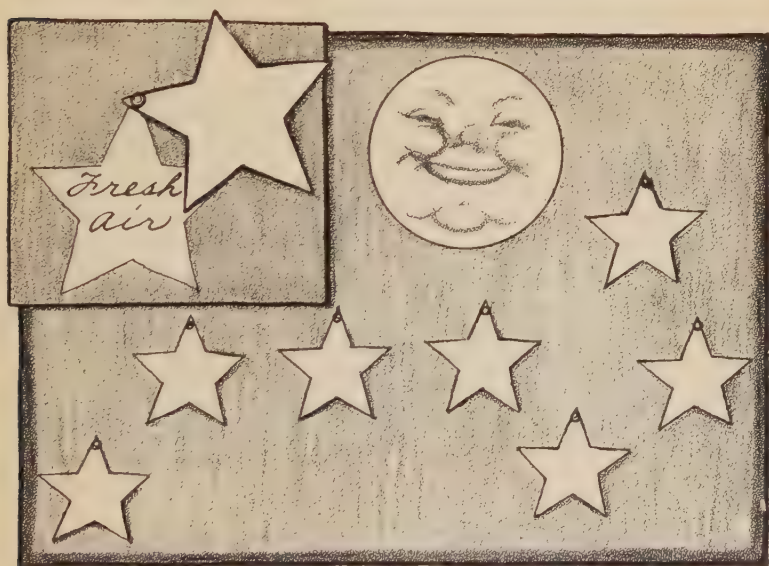


Figure 70. The Dipper of Health

Arrange seven cardboard stars—each about 4 inches in diameter—on a cardboard background about 18x24 inches. (See Figure 70.) Each star should be fastened to the background by means of a pin or some other arrangement so that the star can be swung to one side, revealing what is written underneath. The stars may be covered with gold or colored paper.

Tell the class about the different ways in which people

try to read the future, and emphasize the thought that an individual's future depends largely upon what he does. The stars in the heavens have no more influence on man than he has on them. The only stars that can influence the lives of boys and girls and men and women are those which have a message written by human hands.

Let the class guess what the stars in the "Dipper of Health" have to say. Ask some one to swing one of the stars to one side and read what is written underneath. Have a general discussion on the topic, and then proceed with the other stars. Or, if it seems to suit the purpose of the teacher better, take up the consideration of the other star topics at some subsequent lesson. Discuss *cleanliness* of hands, food, drink, and mouth, especially; *exercise*, not only of muscles but of self-control; *rest* of the muscles, eyes, mind, digestive organs, and other parts of the body; *nutrition*; *sunshine*—especially out of doors rather than through ordinary window glass; *play*—happiness is healthful, and children should be encouraged to play together; *fresh air*.

The point may also be made that this "Dipper of Health" is far safer than the one from which several drink used in some schools and homes.

Blackboard Material

The meaning of health. Print the word H E A L T H on the board. Let the pupils give their definitions of health. Summarize the discussion and try to bring out the thought that health is one of the most valuable things in the world by making use of the following methods (See Figure 71.):

1. Go over the letters with yellow chalk, bringing out the idea that *health is golden*.
2. Show that there are different degrees of health by

filling in with yellow chalk shading the upper part of the two H's, and emphasize the idea that the right kind of health is *brimming over* with strength, happiness, enthusiasm, energy, beauty.

3. Show that health makes the muscles of the legs strong by making the lower part of the letter A heavy.

4. Show that health makes the muscles of the arms strong and skillful—by making the upper part of the letter T heavy.



Figure 71. The Meaning of Health

5. Health makes the back strong and straight—show by making the upright part of the letter L heavy.

6. Health is a factor in good teeth. It provides them with the best kind of nourishment, and it gives energy for brushing them and keeping them clean. Change the letter E so as to give the appearance of teeth. Tell the class that you use *white* chalk here because a *gold tooth* has no place in youth.

Intra-class competition in health. Stretch a cord or a wire across the top of the blackboard in the front of the room, and draw on the board at each end, goal posts for

football as in Figure 72. Make a cardboard football and place a clip on the top so that the football may be hung on the wire. Divide the class into two teams, and explain that they are to compete with each other in games, first aid, and hygiene. Start the football in the middle, and move it either to one side or the other depending upon the amount of credit the two teams win. For example, the team winning the most games during the week would



Figure 72. Goal Posts of Health

receive five points—five yards, let us say. Similarly, the team getting the best score in personal hygiene during the week, or doing best in first aid demonstrations would receive five points. If the competition is keen, the football should move back and forth across the field, and stimulate a great deal of interest.

SUMMARY

The future of man's health lies within his own hands. Science will continue to point out the way of progress.

and it will be able, no doubt, to help man along the way, especially where the going is the hardest, but it cannot do the impossible. Science can wage successful warfare against bacterial diseases and it can immunize man against some of the most deadly infections—but it cannot immunize man against himself.

Statistics tell us that bacterial diseases are decreasing, due to the remarkable advances which science has made in the prevention and treatment of infectious diseases. On the other hand, physiological diseases appear to be increasing. This is a situation which gives considerable cause for misgivings; it means that man has yet to make practical application of the health knowledge which science and experience are giving to him. There is a peculiar sentiment born in the heart of every adult to do everything possible to save the lives and health of children. This has resulted in an intensive child welfare campaign through the whole civilized world with a marked reduction in the diseases of childhood. Unfortunately, however, there seems to be no similar wide spread sentiment in the hearts of adults to save themselves.

It is extremely difficult to force an individual to live hygienically, but when it comes to influencing him through a change of attitude and a new point of view to live fully and usefully society must look to education. The importance of the regular and systematic health examination needs to be given more emphasis. Its value must be brought out more clearly. Not once, but for a thousand and one times should the words of someone who has said, "It is better to prepare and prevent than to repair and repent" be sent echoing and re-echoing through the minds of men until they are thoroughly awakened.

[Health examinations, business-like follow-up of the medical findings, and moderation in all things need to be

the accepted health code of every individual. In improved individual hygiene, probably more than in any other single factor—is to be found the solution of man's chief health problems in the future.

Questions for Consideration

1. Name the more important unsolved health problems of this generation, classify them as bacteriological or physiological, and give your opinion as to their relative importance.

2. Professor Jay B. Nash of New York University says that "There are three great 'Whats' in all education . . . What does the child know? . . . What can he do? . . . What will he do?" Name the more important health habits, attitudes and ideals that every teacher ought to try to instill in her pupils so that there will be a minimum of disease and dependency and a maximum of health and helpfulness as the result of the way in which they order their lives in the days before them.

3. Do you think that the time will come when schools will open the year round with the exception of holidays and short vacations at regular intervals? What are some of the things that need to be considered, including health, economic, and educational factors?

4. Modern educational opinion sets up substantially the following efficiencies as desirable in working out the accepted educational aim of today—social efficiency: Vital efficiency, vocational efficiency, avocational efficiency, civic efficiency, and moral efficiency. In what ways can the school help to realize these aims?

5. Do you believe that eugenics is going to be an important factor in promoting health, especially mental health? Give reasons for your opinion.

References for Further Reading

Gulick, L. H., *The Efficient Life*. (Doubleday, Page and Company.)

Hill, H. W., *The New Hygiene*. (The Macmillan Company.)

Jewett, F. G., *The Next Generation*. (Ginn and Company.)

Literature from the American Society for the Control of Cancer, 370 Seventh Avenue, New York City.

Literature from the Life Extension Institute, 25 West 45th Street, New York City.

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